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EDITED BY

GEORGE M. GOULD, M.D.

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ORIGINAL LECTURES.

CASES ILLUSTRATIVE OF THE EFFICIENCY AND NON-EFFICIENCY OF DIGITALIS IN THE TREATMENT OF DIFFERENT STAGES OF VALVULAR DISEASES.

A Clinical Lecture,
delivered at the Philadelphia Hospital.

BY FREDERICK P. HENRY, M.D.,
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[Reported by W. A. NEWMAN DORLAND, M.D.]

GENTLEMEN: This patient is, as you see, a colored man about sixty years of age, who when admitted complained of intense dyspnœa, amounting to orthopnœa, in addition to which there were great feebleness and irregularity of the pulse, slight œdema about the ankles and legs, and some ascites—in fact, a general anasarca. At the time of his admission to the hospital, on November 18th, I could almost bury my fingers in the skin of the chest, so great was the œdema. This has now disappeared not only from this point, but also from the legs. Besides these symptoms there were signs of pulmonary congestion. The cause of this alarming array of symptoms was evident. There was no difficulty in detecting a systolic murmur over the mitral region, which was transmitted to the left so as to be heard at the anterior border of the latissimus dorsi muscle of that side. The time of its occurrence, the area of greatest intensity, and the direction of transmission indicated mitral insufficiency, with a certain amount of regurgitation into the left auricle and interference with the pulmonary circulation. The veins of the pulmonary system are destitute of valves and pursue a remarkably straight course, and hence in case of disease this anatomical peculiarity becomes a disastrous feature.

The symptoms in this case came on suddenly, although the lesion on which they depended was an old one. Whenever we are called upon to take charge of a case of acute disease, we should ascertain whether the attack originated *de novo* or whether it has for its foundation some chronic organic defect. It is unnecessary to mention how prognosis and treatment will vary according to the results obtained from such an examination.

This man tells us that on the day before his admission he was whitewashing a damp, cool cellar. Indeed, it was more than damp, for his feet and legs were immersed in cold water. There has been nothing inflammatory in the nature of his attack, as is indicated by his temperature-chart, which shows a curve persistently subnormal, with the exception that twice it exceeded the normal point and twice it reached the normal. Normally an antagonism exists between the venous and arterial circulations, the maintenance of which is essential to health. In disease this antagonism is destroyed. In this case the arteries gave up the struggle, their tension relaxed, and the whole circulation became of a venous type, as shown by the œdema and other symptoms.

The object of treatment, then, was to restore arterial tension, and this was done by the use of digitalis, which is still the best of the many cardiac tonics.

To-day I propose to say a few words concerning the action of this drug, illustrating my remarks by facts in the clinical history of this case. Results thus obtained are worth more than those obtained from dozens of experiments upon animals. So-called experimental therapeutics has often nothing to do with clinical therapeutics. To illustrate this point, the other day a friend of mine told me of his ineffectual attempts to kill a superannuated horse by prussic acid, and in a paper recently read before the College of Physicians a number of experiments were reported, one of which consisted in injecting beneath the skin of a dog, weighing fifteen pounds, thirty grains of quinine, equivalent in a man weighing two hundred pounds, to four hundred grains—a dose entirely impracticable. I hold that a clinical study of the action of drugs is more instructive than any number of experiments upon animals.

In a study of the present case, in the first place I would emphasize the fact that these symptoms arose suddenly and followed exposure to cold and wet, and that they promptly yielded to the administration of digitalis. This indicates that there are many healthy muscular fibres in the man's heart. Otherwise the digitalis would have had no effect on his condition, the first requisite to the successful action of the drug being the presence of healthy fibres in the heart. Are there any methods by which we may judge of the degree of degeneration to which the cardiac muscle has advanced? There are. In the first place, we are justified in inferring the presence of a certain amount of healthy muscular fibres if the first sound is relatively louder and more prolonged than the second. This opinion is corroborated if the apex-beat is clearly defined. Again, a distinct murmur can only be produced by a heart acting with considerable force. A faint murmur associated with other symptoms of cardiac failure is, therefore, more serious than a loud one. In such cases digitalis is indicated.

Another indication for the employment of digitalis, an indication distinctly present in this case, is a feeble, rapid, and irregular pulse. Attention was called to this by Withering, the first systematic writer on the use of the drug. Withering noticed that digitalis is much more efficient when the pulse is weak and feeble than when it is hard and regular. We also find a further indication for its employment in diminution of the urinary secretion, which was a very marked symp-

tom in this case, only 15 ounces of urine being passed in the first twenty-four hours after his admission. It subsequently increased to 33 ounces, 137 ounces, 89 ounces, and so on. There was a very slight amount of albumin in his urine, and this fact, taken in connection with the absence of casts, tends to exclude Bright's disease.

With reference to the action of digitalis in heart disease, we may divide the heart's action into three stages: the first, or stage of *eusystole*, when compensation is well maintained, and it is unnecessary to give digitalis; in fact, under such circumstances, the drug is useless and may even be injurious. Shortly after this stage the symptoms may change, and the second stage, that of *hypersystole*, follows. In this the heart is endeavoring to overcome the valvular defect, and in doing so is exhausting itself. It is making a greater effort than is necessary, and is becoming hypertrophied, as evinced by displacement of the apex-beat. There may be at this stage a sensation of fulness in the head, tinnitus aurium and insomnia. Here digitalis is decidedly injurious. The third stage of cardiac disease is a condition of *hyposystole*. This begins with dyspnœa on slight exertion, or even during ordinary conversation, a sure sign that the circulation is approaching the venous type.

A division of the heart's action into these three stages explains certain discrepancies of opinion with reference to the use of digitalis in cardiac disease. Thus Grisolle has stated that digitalis is contra-indicated in all forms of stenosis; while, on the other hand, Lelion, another Frenchman, maintained in his inaugural thesis exactly the reverse, viz., that digitalis was indicated in all cases of aortic stenosis. In 1877, Milner Fothergill, in a paper published in the *British Medical Journal*, adopted a view similar to that of Lelion, so far as aortic stenosis is concerned. In aortic stenosis, he says: "By exciting ventricular contraction more blood is enabled to be passed in a certain time, and thus equilibrium is maintained." Niemeyer, however, took an opposite view of this question. The same discrepancies exist in regard to stenosis of the mitral valve. Niemeyer recommended its use in this condition; while, on the other hand, Potain says that in mitral stenosis digitalis may be long dispensed with. Finally, Gubler has declared it to be entirely useless in lesions of the mitral valve, whether stenotic or regurgitant.

Can these statements be reconciled, and, if so, in what manner? Certainly not by impeaching the testimony of these men who were authorities in their time. By considering the different stages in which the drug was administered we can arrive at an exact result. Hence the division of cardiac disease into three stages: in the first of which digitalis is useless and may be injurious; in the second it is injurious, and in the third it is invariably beneficial if the degeneration of the muscular fibres has not proceeded too far.

Some valvular lesions are more benign than others. Thus, mitral stenosis is the least dangerous, according to Austin Flint, while others assert that mitral regurgitation is the most benign. According to all, sudden death is more apt to occur in aortic regurgitation than in any other form of heart disease, and some go so far as to say that it is the only form that is likely to terminate in sudden death. Cardiac lesions may exist for many years with no symptoms, the patient dying of another affection. In these cases digitalis is not required. The indication for the employment of digitalis depends upon the condition of functional activity of the cardiac muscle. If it is able to perform its function, digitalis is useless. On the other hand, if the heart is acting with unnecessary strength, to overcome the effects of the lesion, use drugs such as the bromides, morphine, and aconite, associated with a bland diet, in which the only animal ingredients are milk and eggs. In the stage of hyposystole some one of the many preparations of digitalis may be employed. In the case under consideration we gave two drachms of the infusion every three hours, until the urine was very decidedly increased in amount, the pulse strong and regular, and the dyspnœa had entirely disappeared. In prescribing digitalis do not be disappointed if you do not obtain immediate results. In this case the urinary secretion was not decidedly increased till forty-eight hours after his admission, when it rose to considerably more than one hundred ounces. We then stopped the digitalis and administered caffeine to maintain diuresis.

There are certain points connected with the action of this drug which by the inexperienced are at times thought to be the effects of the disease itself. For example, it sometimes renders the pulse very unstable, as in this case, in which slight exertion made it rapidly rise to a high point. Consequently the best effects of the drug are secured by keeping the patient quiet, not allowing him to sit up until the equilibrium is properly restored. When giving digitalis, compare the radial pulse with the cardiac beat. You will often notice that the latter is more rapid than the former. The heart is not strong enough to give rise to a beat at the wrist with every contraction, and sometimes this disproportion increases to two to one. This is supposed by some to be due to a separate contraction of the two ventricles. I reported a case in 1881 in which I think this condition existed. The sphygmogram showed two beats of the heart to one of the pulse, with a tracing which was taken over the heart.

The relative size of the two beats is what one would expect from the relative strength of the two ventricles. When we consider the arrangement of the cardiac muscular fibres, it seems almost impossible to have the ventricles acting asynchronously, but these cases show its possibility. This action of the heart has been attributed to the effects of digitalis, but the question is an open one. There is, however, a condition undoubtedly due to the action of digitalis. This is an irregularity of the heart called "*pulsus bigeminus*," two beats of the heart followed by a long pause, a condition which may continue for hours.

In this case the action of digitalis has been markedly successful. The patient has still signs of bronchitis, but there is no pulmonary œdema and no orthopnœa. The heart is acting with regularity, the murmur is present and stronger than on admission—a good sign. The urine is increased in amount and the appetite is good. Failure of appetite and other signs of digestive disorder are always present in the stage of failing compensation, so much so that "*cardiac dyspepsia*" is now recognized as a distinct morbid condition.

I now show you a case in which digitalis has been of

no use whatever, and in which we were obliged to abandon the administration. The patient is a white man, sixty years old, a native of Ireland, who was admitted April 21, 1890. When I first saw him he had pain in his chest, and on examination I found a murmur in the second interspace at the right border of the sternum, synchronous with the systole of the heart, and propagated along the arteries of the neck. There was no regurgitant murmur. If the semilunar valves are contracted you will find a murmur not only in the systole, but also a regurgitant murmur, that is, a "see-saw" murmur. If the murmur is systolic alone, with no trace of regurgitation, you will find the lesion in the aorta itself, as a rule, above the valve. In this case we have all the symptoms of angina pectoris, except that they do not occur in paroxysms. The pain radiates from the heart involving the right side as well as the left. It is a subacute or chronic case of angina. The condition of the heart was that of hypersystole—great force and rapidity of action, with a pulse of 100 per minute. Digitalis was doing no good or was actually injurious. We stopped its use and gave the patient one-eighth of a grain of sulphate of morphine, every three hours. He improved greatly under this. The other points in the case are of no special interest beyond a great tenderness of the liver from venous congestion. I would like you to bear these two cases in mind, as showing the different effects of digitalis under different circumstances.

ORIGINAL ARTICLES.

TYPHLITIS, PERITYPHLITIS, AND ALLIED AFFECTIONS, WITH SPECIAL REFERENCE TO TREATMENT.

By W. T. DODGE, M.D.,
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TYPHLITIS is defined as "an inflammation of the cæcal region; perityphlitis as a morbid process commencing in the connective tissue surrounding the cæcum; and appendicitis as an inflammation of the vermiform appendix."[1]

Numerous differential diagnostic signs are pointed out by authorities, the most practical being those described as follows by Fitz:[2]

"The occurrence of three important symptoms, localized pain, fever, and circumscribed swelling in well-defined order indicate appendicitis. Prolonged constipation, late-appearing fever, pain of long duration, and doughy character of the tumor occupying the lumbar region indicate fæcal cæcitis. Constipation, early tympanites, retention of flatus, fever appearing late are symptoms of intestinal obstruction."

In practice the most expert diagnostician will often find it impossible to make a differential diagnosis. As will be seen in the cases reported in this paper, all the varieties of disease of the cæcal region are represented by a very similar array of symptoms, the more acute symptoms occurring in the case of perforating appendicitis with subsequent general peritonitis: and this is the point of most value to the attending physician. When the symptoms are acute and violent, and are not speedily relieved by a movement of the bowels, no time should be wasted, but an abdominal section should be immediately performed.

The cause of inflammation in the cæcal region is usually an accumulation of hardened fæces in the cæcum or ascending colon, or the entrance of some foreign body into the appendix.

The majority of cases that result in suppuration have their origin in the appendix. The attack is usually preceded by constipation and may come on with a chill.

There are always pain in the abdomen, referred particularly to the cæcal region, tympanites, general abdominal tenderness, but more marked in the right side, dulness on percussion over the right iliac region and sooner or later the development of a distinct tumor which can generally be recognized earlier by rectal examination than through the abdominal wall.

The important practical question that confronts the practitioner when he sees one of these cases is, in my opinion, whether pus has formed, or whether the symptoms are entirely due to the presence of hardened fæcal masses in the large intestine, which condition I believe to be usually the first stage of cæcal abscess.

In many instances, cases that present most grave symptoms, with every appearance of pus-formation, will rapidly recover when free fæcal evacuations have been obtained. In all cases in which the indications for immediate operative interference are not imperative, an attempt should be made to open the bowels at once, and I have found nothing so effectual for this purpose as the administration of full doses of sulphate of magnesium. I am in the habit of placing such cases upon tablespoonful doses of this salt given every three hours until fæcal evacuations are obtained unless the exhibition should be followed by increased pain. It is, also, a good plan to give large enemata of warm water.

Most writers are opposed to giving purgatives when symptoms of acute inflammation are present, but I have never seen ill effects from them, and have on several occasions been deprived of an opportunity to operate by the administration of a few doses of Epsom salts.

The patient should be relieved from excessive pain by the administration of opiates, soothing poultices should be placed upon the abdomen, and the diet restricted to liquids.

When free fæcal evacuations are not followed by improvement in the symptoms, or when it is found impossible to open the bowels, lateral abdominal

[1] Tiffany, in Reference Handbook of the Medical Sciences.
[2] American Journal of the Medical Sciences, October, 1886.

section should be performed without delay. If general peritonitis has developed, median section may be done, but under other circumstances the incision should be over the prominence of the tumor. A free incision should be made and the parts thoroughly examined. After opening the peritoneum, if doubt is entertained concerning the location of the abscess, a hypodermic needle may be inserted, and when pus is found the patient should be turned on his side, an incision made, a drainage-tube inserted, and the cavity thoroughly irrigated with boiled water. The walls of the abscess should be stitched to the parietal peritoneum, after which the abdominal wound should be closed around the tube.

The pus may be so thick that it will not pass through a hypodermic needle, and for that reason I am opposed to exploration before opening the abdomen.

The seat of the abscess should be carefully examined and if the inflammation originated in the appendix the latter should be ligatured and cut off. If rupture of any portion of the intestine is discovered, close it by means of Lembert sutures.

In some cases in which rupture into the peritoneal cavity has occurred it may be necessary to make median and lateral openings through the abdominal walls in order to break up the pockets and wash out all the pus. When the peritoneum has not been contaminated the cavity should not be washed out. The after-treatment consists in daily irrigations of the abscess-cavity, concentrated liquid nourishment, and general supporting measures. I append the histories of a few cases which well illustrate these procedures:

CASE I. *Perforating appendicitis; general peritonitis; death.*[1]—Male, aged twenty-five years. On September 26, 1882, while working in the field, he was taken with pain in the abdomen. I saw him on September 29th, and found that he had taken a purgative, which had produced free passages from the bowels but had not relieved his symptoms. He had but little fever, and at no time during his illness was the temperature higher than 102°. It was normal most of the time, particularly toward the end of the case, when general suppurative peritonitis existed. There was much tenderness in the right inguinal region, which soon extended over the entire abdomen.

On October 2d, after consultation, exploration was made with a hypodermic needle and pus obtained. An opening about two inches long was made through the skin, parallel with Poupart's ligament. The deeper tissues were divided on a director until the neighborhood of the peritoneum was reached, when the needle was again introduced and pus obtained. A small opening at the side of the needle was then made with a knife. A small amount of foul-smelling pus escaped. A drainage-tube was inserted and irrigation practised, but no improvement occurred and death resulted on October 7th.

Autopsy: Permission to hold a partial autopsy was obtained. General peritonitis was found, the abdomen being full of pus. A mass of hardened fæces occupied a rupture in the inflamed appendix.

This case occurred in the early days of my professional career, when I entertained more dread than at present of opening the abdomen. I should have made a larger incision through the peritoneum, washed out the cavity thoroughly, and ascertained the condition of the parts by direct examination. Then the ruptured appendix should have been removed and the abdominal cavity thoroughly cleansed. As no surgeon had, at that time, removed a ruptured appendix, and abdominal surgery is a development of later years, it is not surprising that I erred on the side of caution and conservatism. Such a half-hearted, timid operation would be inexcusable under similar circumstances at the present day.

CASE II. *Intestinal obstruction; symptoms simulating appendicitis; large doses of sulphate of magnesium; recovery.*—Male, aged twenty years. I was called to see the patient June 30, 1889, in consultation with Dr. Drummond, of Marlette, Mich., who had been attending him for three days. He had high fever, pain, and tympanites, with a localized tumor in the cæcal region. Dr. Drummond had given large doses of various purgatives and several enemata without procuring a passage of fæcal matter. I personally superintended the administration of a large enema, raising the hips and injecting a gallon of warm water, which, however, returned only slightly discolored.

I then recommended an immediate abdominal section, as the patient was in great pain; but his family being away, consent could not be obtained. While waiting for the arrival of his friends, I recommended the administration of a tablespoonful of sulphate of magnesium every three hours. This was given, and Dr. Drummond afterward told me that he gave in addition a dose of croton oil during the night, and repeated the enemata, with the result of procuring free fæcal evacuation at three o'clock in the morning. Recovery was rapid, and the patient was dismissed, cured, on July 15th.

CASE III. *Intestinal obstruction; probable pus-formation rupturing into the bowels; sulphate of magnesium; recovery, complicated by suppurating parotitis.*—Male, aged twenty-two years. I was called to see the case on March 28, 1890. He had been sick for two weeks, under the care of another practitioner, whom I was invited to meet in consultation; but as the gentleman did not appear, I was obliged to assume charge of the case.

The patient was taken with chills and pain in the abdomen, more severe in the right iliac region; was constipated throughout his illness, and was treated with enemata, and full and frequent doses

[1] Reported in detail in The Physician and Surgeon, vol. iv. p. 483.

of morphine and quinine. I found him free from pain, but under the influence of the morphine. The abdomen was distended and a well-defined, tender tumor occupied the cæcal region. The injections which had been given brought away small quantities of fæcal matter. His temperature was 102½° and his pulse 100. I was several miles in the country, in the midst of a violent snowstorm, and without instruments or assistance, or I should certainly have recommended an immediate operation, as I felt certain of the presence of pus. Under the circumstances I concluded to try the effect of salines, and to prepare for an operation on the following day. I directed the administration of a tablespoonful of sulphate of magnesium every three hours until some effect should be produced, and informed the family that probably an operation would be necessary.

At their request, Dr. H. M. Leach, of Saginaw, was invited to be present the next morning. At 9 o'clock in the evening I was again telephoned for, and was informed that the patient seemed much worse; but before my arrival a free evacuation from the bowels occurred and the aspects of the case had greatly changed. Six doses of Epsom salt were given before a movement was obtained. During the night several free evacuations occurred, and when Dr. Leach arrived in the morning the tumor and the serious symptoms had entirely disappeared, excepting the tenderness over the cæcum. The patient's progress to health was interfered with a few days later by the development of an abscess in the parotid gland.

The possibility of an abscess discharging by the bowel was considered, but the great quantity of fæcal matter precluded the possibility of finding pus, if it were present. The young man's mother was certain that she saw pus in his fæces a few days subsequently, which the occurrence of suppuration in the parotid would confirm. Restoration to complete health was slow.

CASE IV. *Recurring appendicitis; expectant treatment; recovery.*—Male, aged about thirty years. I saw him on July 25, 1890, in consultation with Dr. Atkinson, of Marlette. The man gave an interesting history. Several years ago he suffered from an attack of peritonitis, which subsided under treatment, but left a tender spot in the cæcal region which had persisted for several years, preventing the patient from participating in out-of-door sports and from doing manual labor; even riding in a wagon produced pain in the right side. He also stated that for some time he had noticed a tumor in the cæcal region, but that it gradually disappeared. He had suffered from chronic constipation for some years, but had been cured by his attending physician, Dr. Atkinson. On several occasions there had been recurrences of the swelling and pain in the cæcal region, confining him to his bed for some time, and then gradually disappearing without special treatment.

The present attack commenced a week previously to my visit, and was attended with considerable pain, especially upon attempting to exercise. His temperature had been more than two degrees above normal, and opiates were occasionally required at night to procure rest.

A well-defined, hard tumor, the size of a hen's egg, occupied the cæcal region, and was quite tender to the touch and movable. Our diagnosis was recurrent appendicitis, and the nature of the trouble was explained to the patient, together with the possible dangers and the probable result of an operation, as well as the possibility of acute symptoms supervening and necessitating an operation to save life. He chose the expectant plan of treatment. The tumor gradually disappeared, and the patient was doing his work (that of a bookkeeper) in three weeks.

Judging from the previous history, it is quite probable that this patient will have subsequent attacks, with possibly more serious results.

In my opinion, the performance of an aseptic abdominal section for the removal of the appendix, would be a wise and justifiable procedure in well-defined cases of this nature.

CASE V. *Constipation; abscess; abdominal section; recovery.*—Male, aged about twenty-five years. On August 8, 1890, I was requested by Dr. McCrae, of Marlette, to operate on this patient, whom he had seen on August 4th, in consultation with Dr. Wallace, of Elmer City. The patient had been ill for two weeks, and five years previously had what he said was an attack of peritonitis.

The present attack was preceded by constipation and was ushered in by a severe chill. Great abdominal pain, referred principally to the cæcal region, had been a prominent feature of his illness. His physician, Dr. Wallace, procured a movement of the bowels early in the case, and gave him excellent medicinal treatment. Dr. McCrae recommended an operation when he first saw the patient, but the friends did not give their consent. We now found him in considerable pain, with a tympanitic abdomen, and a well-defined tumor in the right side, most prominent in the cæcal region. His temperature was 102½°.

The friends hesitated to consent to an operation, although we pointed out its absolute necessity, and it was not until late in the day that they finally gave us permission to proceed.

Dr. Wallace anæsthetized the patient and Dr. McCrae gave me very valuable assistance during the operation.

I opened the abdomen in the usual manner, making a free incision over the prominence of the tumor. When the peritoneum was opened the cæcum and appendix appeared to be in a perfectly healthy condition. I was naturally much astonished at this, as we had diagnosed cæcal abscess.

A tumor could be felt under the cæcum, extending upward beneath the ascending colon. After passing a large aspirating needle into this mass several times a few drops of pus were obtained. The patient was now turned upon his side, aseptic cloths were packed around the intestines to keep them in place, and a free incision was made into

the abscess. More than a quart of thick, fæcal-smelling pus escaped.

I passed my finger into the cavity and found that it extended half-way across the abdomen, and was separated from the peritoneal cavity by only a thin membrane. There was rather free hæmorrhage from the sac, but it was controlled by injecting hot water.

The cavity was thoroughly washed out with boiled water, a drainage-tube was inserted, and the abdominal wound united with catgut, care being taken to attach the parietal peritoneum to that covering the abscess-wall.

Darkness came on soon after we commenced, and the greater portion of the operation was done by lamplight. Free discharge continued for several days, but gradually subsided. The abdominal wound, excepting where the drainage-tube was inserted, healed by first intention.

The after-treatment was conducted by Dr. Wallace, and consisted of daily irrigation, at first with boiled water, subsequently with astringent solutions.

The patient's general condition improved rapidly, and there was no elevation of temperature until three weeks after the operation, when he arose and walked into an adjoining room, and was immediately taken with violent pain, followed by an elevation of temperature to 102°.

This trouble gradually subsided, and Dr. Wallace wrote me on October 18th that the patient was then sitting up from two to fours daily, and was gradually gaining strength.

ROUGE'S OPERATION FOR THE REMOVAL OF A NASAL SEQUESTRUM.[1]

BY CHARLES H. KNIGHT, M.D.,
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IN the opinion of Rouge,[2] of Lausanne, whose name has been given to the operation presently to be described, the condition known as ozæna is invariably associated with some lesion of the bony framework of the nose. Proceeding on this theory he tried to devise a method of operating on these unfortunate cases which should give more room for exploration and at the same time be devoid of excessive risk. He found that the dimensions of the entrance to the nasal fossæ might be considerably increased by separating the soft parts from the upper jaw, thus permitting the nose to be tilted upward toward the forehead. This procedure answered admirably in the case the history of which follows:

H. H., mulatto, aged thirty-five years, single, a waiter, came under my observation in December, 1879, having had, six weeks previously, a genital chancre. He had received only local treatment, although about three weeks after the chancre appeared he had a rash on his trunk and arms, and a sore throat. At the time of his visit to me the eruption had faded, but the chancre had not yet healed, and his tongue and tonsils were covered with mucous patches. He had enlarged inguinal, post-cervical, and epitrochlear glands. He suffered somewhat from osteocopic pain, and there was some alopecia. The general condition of the patient was good, and he was a man of good habits.

He was put upon mercurial treatment, under which he continued for about six months. In November, 1880, one year after infection, patches of tubercles appeared on his forehead and in front of his left ear. The tubercles ulcerated and coalesced, forming an open sore, which was very persistent, but finally yielded to mixed treatment and the local use of acid nitrate of mercury.

He had no more trouble until two years ago, when a swelling appeared in the roof of his mouth and his nose became so obstructed that at times nasal breathing was impossible. The swelling over the hard palate softened and ruptured, and at the same time several small pieces of dead bone were expelled from the nostrils.

He did not again come under my care until two months ago. At that time the septum had been completely destroyed but the columna was intact. The turbinated bones were gone, there were a large, partially-detached sequestrum lying on the floor of the nose, and a perforation of the hard palate far forward. The central incisor teeth of the upper jaw, and the alveolar process and the bone of the maxilla itself at that point were missing. The patient's sense of smell was abolished, but the odor emitted from his nose was almost intolerable. There was remarkably little external deformity, the change of contour being limited to a very slight depression just below the bridge of the nose.

My efforts were first directed to removing the sequestrum piecemeal by the use of cutting-forceps and the electric drill. The patient proved to be so intractable, in spite of the free use of cocaine, that nothing could be accomplished, and I determined to remove the bone at one operation, with the aid of anæsthesia. This was done at the Manhattan Eye and Ear Hospital, September 16, 1890. The patient was etherized and placed on his back with his head dependent. An incision was made along the gingivo-labial fold of the upper jaw, and the alæ of the nose were dissected from the subjacent bone. The lip and the tip of the nose were everted and forcibly retracted upward, exposing the nasal cavity. The sequestrum was then seized with forceps and found to be firmly attached posteriorly. With the aid of my forefinger passed through the hole in the hard palate, and by a twisting process it was finally disengaged and was dragged forward; but it could not be withdrawn until the fibrous band which completed the arch of the maxilla was divided. Even then considerable force was required, and the lateral incisor teeth were so loosened that they had to be removed. Hæmorrhage was free, but by no means alarming. The parts were replaced, no dressing whatever being used. The

[1] Read at a meeting of the Laryngological Section of the New York Academy of Medicine, October 28, 1890.

[2] Nouv. Méthode pour le Trait. chir. de l'Ozène. Lausanne, 1873: Bull. Soc. Méd. de la Suisse Rom., Lausanne, 1868, vol. ii. pp. 265–68; Cong. period. internat. des. Sci. Méd., Compte rend., Genéve, 1878, pp. 337–54. San Francisco Western Lancet, 1880–81, vol. ix. pp. 200–4. Translated by Whittelly.

patient was kept in bed, put upon fluid diet, and not allowed to talk. The mouth and nasal cavity were frequently irrigated with a weak carbolized solution.

On the second day he left the hospital, having had no unfavorable symptoms. A week later two fragments of bone were removed through the nostrils, the wound in the mouth having healed.

The present condition of the patient is one of relative comfort. Fœtor is almost entirely absent, but there is and always will be more or less annoyance from the accumulation of secretion in the nasal cavity. The discomfort in eating and speaking, due to the perforation of the hard palate, may sometime be overcome by the adjustment of a dental plate. Meanwhile the opening has to be kept plugged with absorbent cotton.

It is difficult to determine what this sequestrum represents, both on account of its peculiar shape, and because the destruction of the bony walls of the nasal fossæ was so extensive. It is apparently the palatal process of the right superior maxilla, or the horizontal plate of the palate bone much thickened by inflammatory deposits. The normal landmarks have disappeared. The interior of the nose is converted into one immense cavity, its left wall being quite smooth, its floor being deficient anteriorly, and on the right side freely communicating with the cavity of the maxillary sinus.

In connection with the specific history given by this patient, it should be added that the man was married three years ago. His wife has never conceived, and has not given the slightest evidence of syphilitic infection. The patient himself has had no recent symptoms of active syphilis. The extraordinary destruction caused by the disease was, in my opinion, largely due to his neglect of treatment. Whether the concentration of its effects upon the nose was invited by some preëxisting intranasal lesion or deformity, I am unable to say.

In a discussion on deflection of the nasal septum, at the recent meeting of the British Medical Association, Woakes[1] expressed the opinion that Rouge's operation affords but little additional room, and my limited experience leads me in a measure to share this view. But for the loss of the median portion of the superior maxilla and division of the connecting fibrous band, this large sequestrum, which measured one and one-half inches in length and one and one-eighth inches in width, could not have been removed unbroken.

Although septal deflections are perhaps the most troublesome and perplexing condition with which we have to deal, yet the part usually involved is so accessible through the nostrils that the methods in ordinary use should suffice, provided the resiliency of the cartilage be destroyed. The obstacle to success lies, not so much in the contracted space in which we have to operate, as in the difficulty of overcoming the spring of the cartilage.

[1] British Medical Journal, September 13, 1890.

A recent number of the *Lancet*[1] contains an elaborate account of a case of deviated septum occurring in a boy seven years old, for which Rouge's operation was done by Mr. Clinton Dent. The operator suggests that the severity of the operation may seem disproportionate to the condition to be rectified, but consider it justified by the disfigurement which may be present in the case, by extreme impediment to breathing, and by the probability of serious complications should lung trouble supervene. The reasons enumerated are certainly excellent ones for attempting to remedy the condition in some manner, but they hardly seem to authorize the selection of a comparatively intricate method, provided the results are attainable in a simpler way.

Rouge's interest in the new operation, and, one might add, his misconception of the pathology of ozæna, may have led to the unnecessary use of his method; nevertheless it must be admitted that most of his results have been remarkably satisfactory. With one exception, in every case the symptoms were promptly and completely relieved. One of his cases, that of a woman[2] twenty-eight years of age, who died of pyæmic meningitis on the sixth day after operation, very forcibly illustrates the necessity of extreme caution in manipulating the upper part of the nasal chambers. In this case the whole of the perpendicular plate of the ethmoid was removed, and the os panum was gouged away over an area of about one centimetre, so that the finger could be passed directly into the right orbital cavity. At the autopsy the ethmoid bone was found to be healthy and uninjured and the cribriform plate was intact. There were no purulent foci in its vicinity, but the ophthalmic vein was occluded by a purulent clot and there was general suppurative meningitis. Such an accident might of course follow any operation, especially if encouraged by neglect of antiseptic precautions or by the use of excessive violence. In studying the human skull one cannot avoid being impressed by the extreme delicacy of the osseous tissue forming the roof of the nasal cavities, and by the fact that the effects of traumatism inflicted in this region might readily be transmitted to the cerebral fossa. Operative interference in this neighborhood should therefore be conducted with the utmost care. The fatal result in this case should certainly not be considered an argument against Rouge's operation. An equal degree of injury might easily have been done by an operation performed through the anterior nares.

Opinions differ as to the merits of Rouge's operation. Lucas[3] considers it free from danger, and in

[1] July 28, 1890, p. 1425.
[2] Watson: Diseases of the Nose and its Accessory Cavities.
[3] Lancet, January 20, 1883.

many cases advantageous. Harrison Cripps[1] thinks it easy of performance, and narrates a case in which he met with no annoyance whatever from hæmorrhage. Haward[2] has a high opinion of the method, and gives histories of four cases in which he resorted to it without accident. D'Azambrya[3] recommends it only for intractable cases, recognizing the possibility of phlebitis and purulent infection.

According to Beverley Robinson,[4] Trélat thinks that it should not be done, on account of hæmorrhage, the difficulty of performing it, and because of its inefficacy, he having had no successful result. Robinson himself seems to regard the danger of hæmorrhage as an important objection, which is hardly counterbalanced by any decided gain in space offered by this method. On the other hand, Bosworth[5] makes light of the risk and the difficulty of the operation. He thinks it interesting from an historical point of view, and from its novelty, and remarks that in many cases it best meets the indications.

In a recent paper by W. Spencer Watson, entitled "Ozæna and Some Other Forms of Rhinitis," may be found the following description of a so-called *failure* of Rouge's operation:[6]

"A girl, aged seventeen years, was under my care at the Great Northern Hospital with very obstinate ozæna. The results of treatment were so far unsatisfactory that the patient went to another hospital and placed herself under the care of a distinguished surgeon, who performed Rouge's operation for her. She afterward again presented herself at the Great Northern, and considered herself cured. There was, however, distinct evidence of the ozæna stench in her breath. I afterward met the surgeon who operated on her, and he very frankly acknowledged that though he had expected to reach some carious or necrosed bone, none had been found, and that he had been disappointed in the results of the operation. He also expressed his opinion that it was not so easy a proceeding as he had anticipated, and that there had been rather embarrassing hæmorrhage."

I would venture to criticise the title of the paper, as well as the opinion which does not discriminate between failure of an operation and lack of judgment on the part of an operator. Ozæna is not a form of rhinitis: it is a *symptom* of a form of rhinitis. Rouge's operation should never be undertaken until we know for what purpose it is to be done. The class of cases to which it seems to be particularly adapted is that of which my own is a typical example, namely, syphilitic necrosis of the skeleton of the nose. In this condition the sequestra are apt to be of large size and irregular shape, hence their withdrawal through the natural passages involves unnecessary pain to the patient and unwarrantable damage to the soft parts. The importance of their early removal must be admitted for several reasons. The prolonged retention of necrosed bone must impair the general health, and is at the same time a constant menace to adjacent healthy structures. Moreover, it renders the patient a burden to himself and to his associates.

The chief advantage of this method of operating is that an external wound is avoided, a point of no little importance with some individuals. There is no doubt that it does give some additional space, which may be still further increased, if necessary, by removing a part of the bony wall of the nasal fossæ. Even the slightly-increased space may be just enough to permit the extraction of a jagged piece of dead bone, the removal of which would otherwise have caused considerable laceration.

Finally, although apparently a formidable operation, it is not, in reality, especially hazardous. Hæmorrhage may be copious, but should be readily controlled by pressure, and the process of repair is rapidly completed without deformity.

[1] Ibid., May 5, 1877.
[2] St. George's Hospital Reports, vol. viii. p 123.
[3] London Medical Recorder, May 26, 1875.
[4] Nasal Catarrh, 2d ed., p. 219.
[5] Diseases of the Nose and Throat, vol. i. p. 626.
[6] Lancet, October 4, 1890.

REPORT OF A CASE OF SARCOMA OF THE OMENTUM AND LIVER.

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THE following case of sarcoma, which came under the observation of the writer during his last term of service at the Philadelphia Hospital, is reported on account of the immense size of the newgrowth, and, more especially, because of the great rarity of sarcomata in the location in which this was found:

C. B., aged thirty-five years, white, a native of Switzerland, and by occupation a laborer.

Family history: No family history of tumor; his mother died of dropsy; his father is living, sixty-two years old, and in good health.

Previous history: The patient had scarlet fever in childhood, and one attack of gonorrhœa; has had three healthy children. His wife miscarried once.

History of present illness: In May, 1889, the patient first noticed a small tumor low down in his abdomen, but gave it little thought. The tumor increased in size, and he had some indefinite abdominal pains—never cutting or severe—with slight diarrhœa and headache. Later, he complained of frequent micturition, and of severe abdominal distress when his bowels became constipated. In the early part of October, 1889, he passed portions of a tapeworm; and on October 9th was placed on anthelmintic treatment, which resulted in the passage of a long portion of the body of the worm. The patient was so much weakened by this treatment that he was not subjected to it again.

Meanwhile the abdominal mass continued growing. It was hard, distinctly nodulated, and slightly

movable. There was neither pain nor tenderness. The lower portion could be followed backward above the pubes, as though extending down into the pelvis. The entire growth could be distinctly outlined. On rectal examination, a mass was found in the pelvis and, seemingly, extending to the abdominal cavity. Soon after the patient entered the hospital the liver was found to be normal in shape and size—the edge was not felt—and so remained until a few weeks before the patient's death, when it began to extend below the ribs, and at last was easily felt as a large mass in the epigastric and right hypochondriac regions. Examination of the urine was negative; neither albumin, sugar, nor casts were found.

Thus the case continued; the patient did not emaciate, and his general health was fair; he frequently required purgatives, and was more or less comfortable after evacuation of his bowels. During the last week of life he lost flesh very rapidly, and died quite suddenly, apparently in great pain, after a few hours' unconsciousness.

Autopsy: Body that of a fairly well preserved white man. Abdomen tender and distended. Blue discoloration of the skin over the abdomen. At once, on opening the abdominal cavity, a large, whitish-pink, markedly lobulated and furrowed mass was exposed. The larger part of this extended from the pubes (with a small prolongation extending to the brim of the pelvis) to the ensiform cartilage. There was an adhesion to the abdominal wall just above the pubes. Above, the entire mass was seen to depend from the great omentum, at the root of which was attached a smaller mass. These two portions involved the omentum alone, and were not connected with any of the neighboring structures, excepting by a few inflammatory adhesions. Together they weighed thirteen pounds. On section, they were firm—about the consistency of a fibroid tumor—somewhat softened, and of a pinkish-white color. In the centre of the larger growth was a cavity the size of a large apple, containing a little whitish, watery fluid. A mass was then found attached to the peritoneal covering of the sigmoid flexure. This presented the same structure and appearance as the others, and was of the size of a large fist. A third mass was found filling the cavity of the pelvis and attached to the rectum and partly to the bladder. This was contiguous to the abdominal growth, but not at all connected with it. A fourth mass was attached to the ascending mesocolon, and by inflammatory adhesion to the abdominal wall.

The liver was removed, and was found slightly adherent to the diaphragm. Everywhere projecting from the surface were small and large nodes. In removing the organ a small node was detached from its position and left a round cavity lined with a smooth wall. On section, the nodes were found to be exactly similar to the large abdominal growths. The liver weighed more than eleven pounds. The gall-bladder was stained a bright yellow, but otherwise was normal.

The spleen appeared normal in every respect.

The kidneys were markedly congested, but otherwise of healthy appearance.

In the intestinal canal there was discovered a tapeworm (tænia solium), which was removed entire. Its exact location was, unfortunately, not determined. The intestines, which were pushed up into the right hypochondriac region, were normal.

The heart was healthy.

The lungs were normal, except that the lower right lobe was compressed by the enlarged liver.

On microscopical examination, the growth seemed to be a round-celled sarcoma.

As may be seen from this report, no lesions were found other than those in the liver and peritoneum.

To the above notes, which have been so ably detailed by my resident physician, Dr. Stengel, nothing remains to be added save, perhaps, a brief reference to the temperature-record. The temperature-chart shows that during about one-half the time that the patient was in the hospital there was slight elevation of temperature with remissions which occurred more frequently in the mornings than in the evenings. During the remaining time, including the last eight days, the temperature was subnormal. There was nothing unusual about the pulse, which

FIG. 1.

Upper portion of cut is the anterior surface of the tumor. At the extreme left was the attachment to the omentum.

FIG. 2.

Growth inverted.

varied from 80 to 114 beats per minute. The number of respirations per minute varied from 22 to 32.

REMARKS.—Excluding carcinoma, primary neoplasms of the serous membranes are regarded by high authorities as rare and sarcoma as very rare.[1] Waldeyer[2] has described a case of plexiform angiosarcoma of the peritoneum. After considerable painstaking investigation, I have been unable to find any references to other recorded cases than that of Waldeyer, and this a mere allusion. The question may arise in the mind of the reader, Was the omental growth a primary or a secondary one? According to the history, a small hard tumor was first observed by the patient "low down in the abdomen." Again, on account of the enormous size of the omental tumor (see cuts), coupled with the history of the progress of the case from the date of admission to the date of the patient's death, it is quite certain, I think, that the omental growth was primary. At all events, evidences tending to show that the liver was implicated were wanting until late in the course of the disease. Again, the liver is prone to be the seat of metastatic growths on the one hand, and is extremely rarely the seat of primary sarcomata on the other.

The disease in this instance must have been rather rapidly disseminated, as shown by the several distinct masses, including metastasis to the liver, in this respect following a law of sarcomata, more particularly of the round-cell variety.

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THE TREATMENT OF ECTOPIC PREGNANCY.

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OF the total number of cases of extra-uterine pregnancy there can be no doubt whatever that a certain number go on to a spontaneous cure, and I believe that many more terminate in this manner than we at present imagine. The most common method is by a rupture into the folds of the broad ligament, the death of the embryo, and a gradual complete or partial absorption of the resulting hæmatocele, embryo, and membranes. That death of the embryo may occur before rupture, and while it yet remains in the tube, is, I think, not only possible, but probable in a certain proportion of cases. The result in such a case would be the same as in the former. Just what proportion of cases end in this happy manner is a mere matter of speculation.

These results would naturally make us take into consideration, as one of the methods of treatment, theoretically at least, the expectant plan; but I know of no authority bold enough to advocate it practically. Such a large number of cases terminate fatally, and the dangers to the patient are so great that, at the present time, it is thought necessary to take some active steps in treating every case which comes under observation, and not to take any chances of disaster overtaking the patient. This course seems to me to be the only reasonable one, and when a case is even only suspicious, active measures should be taken to prevent the possibility of future trouble.

In considering the treatment of extra-uterine pregnancy I shall confine myself to the period before rupture. All are agreed that after rupture of an ectopic gestation-cyst has taken place there is but one proper treatment, viz., abdominal section. In the discussion of the relative merits of abdominal section and electricity it has too often been assumed by the opponents of the electrical treatment that this treatment is recommended for the post-rupture period. This is not true; no one whose word carries the slightest weight recommends the use of electricity after a rupture has taken place into the abdominal cavity, or after a rupture into the folds of the broad ligament, beyond a certain period, the limit being generally fixed at or under four months; later than this, even electricians recommend either waiting for a viable child and then laparotomy, or laparotomy at once.

There are but two forms of treatment which I shall consider, viz., abdominal section and electricity. All operative procedures from the vagina, except in very exceptional cases, are unscientific and bungling; the sac cannot be removed without the greatest difficulty (if it can be removed at all), and the removal of the whole sac is a great desideratum. Puncture methods, with the object of drawing off the liquor amnii and killing the fœtus, have, in times past, proven so disastrous that I do not think that, with our present safe methods of dealing with the disease, anyone would knowingly attempt them; certainly no one in America. The injection of morphine into the sac, as practised by Winckel and others in Germany, has not proven a success, even in their hands. In Winckel's *Text-book of Midwifery*, translated by Edgar, eleven cases are mentioned as having been treated in this manner. Of the eleven, three were fatal, a mortality of almost twenty-five per cent. The merest tyro could not reproduce such an unfortunate record with either electricity or surgery.

The only method of applying electricity which will be included in my subsequent remarks is the passage of either a faradic or galvanic current through the gestation-sac without a puncture being made. Certain writers, especially foreigners, have

[1] It is well to bear in mind that tumors of the subserous tissues are common, including sarcoma.

[2] A Text-book of Pathological Anatomy and Pathogenesis, by Ernst Zeigler, p. 137.

persistently and, it would almost appear, wilfully misunderstood Americans when they talk of the use of electricity in this disease. The advocates of this method of treatment have always and most emphatically claimed that they did not puncture, and that it was dangerous to do so. In the face of all that has been said on this subject, it is simply gross ignorance, or worse, to misunderstand longer and misquote. The contention, then, is between abdominal section and electricity applied after the most approved methods. I make no distinction between the faradic and galvanic currents. Both are used, both are recommended with equal fervor, and apparently are followed by about the same results.

The advantages of the treatment of extra-uterine pregnancy in the prerupture stages by laparotomy may be summed up as follows:

1. By the operation the fœtus, membranes, and sac are completely removed.
2. Any complicating disease which may exist can be successfully dealt with at the same time.
3. All immediate danger from the existence of the abnormal gestation is at once and forever removed.
4. All possible future trouble from the occluded tube is removed.
5. In cases of mistaken diagnosis, whatever may be found will require surgical intervention, and therefore the mistake is productive only of good.
6. The operation has very little, if any, mortality, and is safe in the hands of anyone who can do a laparotomy with safety.

The disadvantages claimed for the operation by its opponents are:

1. The dangers of the operation itself.
2. Unsexing and mutilation of the patient.
3. The possibility of mistakes in diagnosis, and the consequent unnecessary operation.
4. The patient's horror of an operation.

The advantages of the electrical treatment, as claimed by its advocates, are:

1. The certainty of killing the fœtus.
2. The probability of the absorption of the sac-contents, and the subsequent shrinkage of the tube to a natural size.
3. When the sac-contents are not absorbed, the harmlessness of the remaining tumor.
4. The possible future impregnation of the patient.
5. The avoidance for the patient and friends of the horrors of an operation.
6. The harmlessness of the treatment if a mistake in diagnosis be made.

The disadvantages claimed for the electrical treatment by its opponents are:

1. The uncertainty of killing the fœtus.
2. The danger of delay necessarily incident to the treatment.
3. The dangers during the treatment.
4. The harm done in case of mistaken diagnosis.
5. The dangers to the patient after the treatment is finished.
6. The doubtful nature of the disease in many of the cases treated in this manner.

First, as to the treatment by abdominal section. The points of advantage, as claimed by its advocates, and as given above, make it an ideal treatment in its results, provided those claims can be substantiated. Several of these claims are questioned by its opponents, and we will consider them *seriatim*.

1. It is claimed that laparotomy is a dangerous operation at all times and under all circumstances. This must theoretically be granted at once, but when practically applied to extra-uterine pregnancy it cannot be shown to have existed in the past few years, unless it be in the hands of incompetent men. I am unable to find in the literature of the subject a single case of death following the operation when performed in the pre-rupture stages; and even after rupture there are no deaths which can be justly attributed to the operation—in almost every instance of death the patient was beyond help in consequence of hæmorrhage or shock, or both. On the other hand, look at the long list of brilliant results as reported in the New York and Philadelphia Obstetrical Societies, to say nothing of Tait's individual list of forty-two cases. In the face of this overwhelming evidence, in order to substantiate the fact of danger, a list of bad results must be produced; and as yet no one has had the temerity to attempt this

2. The unsexing and mutilation of the patient.

In no other part of the body is it considered mutilation to remove a useless, diseased, and dangerous member. This cry is merely the plea of the demagogue, and savors of a species of political trickery unworthy of a respectable scientist. The patient is not mutilated, and it is rank nonsense to say that she is. She certainly is unsexed, in the sense that she cannot become again impregnated upon the side from which the sac was removed; that she is unsexed in any other sense is untrue. It must be remembered that almost always the disease is unilateral, and the opposite side remains undisturbed, and in good condition for performing its functions. The case of Tait's[1] which became impregnated a second time after the removal of a unilateral ectopic gestation proves the truth of this. But it is said that double tubal pregnancy exists at times! This is true, and in that case the sterility would be complete. ' It has never been proven in a

[1] Diseases of Women and Abdominal Surgery, 1889.

single case that the woman is not just as sterile after a cure by electricity, or even after a spontaneous cure, as she is after the operation. A case or two may have become pregnant after such treatment, but how can it be proven that the impregnation did not take place on the opposite side, as was the case in Tait's patient, as well as in several others on whom the operation was performed? Both theoretically and practically all the facts are against the electricians, and they must either prove their point or abandon it.

3. The possibility of a mistaken diagnosis, and the consequent unnecessary operation.

In competent hands, even though a mistake in diagnosis be made, the operation will not have been unnecessary. No pelvic tumor exists, which gives rise to symptoms sufficiently serious to cause a diagnosis of ectopic gestation, and which does not require treatment, and the most generally accepted treatment for all these diseases is laparotomy and removal.

4. The horrors of the operation to the patient and her friends.

This is incident to all operations, great or small, and cannot be entirely avoided, however much it is to deplored. I have never found a great amount of trouble from this. When I have explained to the patient and her friends the supposed nature of her complaint and pointed out its dangers they have generally been anxious for the operation and did not display half as much anxiety over it as they did over the disease. Electricity itself is not altogether free from the same objection as far as the patient is concerned. To frighten a woman, it is merely necessary, as a rule, to tell her that something has to be done. Women are not much given to discriminating between degrees of danger in operations. An operation is usually much the same to patients, whether laparotomy, cutting off a toe or applying electricity to kill something, although it must be admitted, that, as a rule, they would object to electricity the least if the choice were given them.

It would seem, then, that the claims for the advantages of the surgical operation are well established, and that in the operation we have an ideal treatment. Here we could rest content did not the advocates of the electrical treatment claim equal advantages for their method. If these advantages as claimed and as given above can be substantiated, it must be admitted that it is equally ideal with the surgical procedure, and the patient must in each case be given her choice, after the advantages of each have been impartially placed before her. In such an event, that she would in the majority of cases choose the electrical treatment is pretty certain.

To these supposed advantages of electricity certain objections are made by its opponents, and, as in the case of the surgical treatment, we will consider these objections *seriatim*.

1. The uncertainty of killing the fœtus.

Coe[1] reports the case of a woman who was supposed to be suffering from extra-uterine pregnancy. Her doctor, who was a most careful practitioner, used first a strong galvanic and then a faradic current with the view to destroying the fœtus. As a result of the application the patient had severe uterine colic and more or less shock. After this treatment had continued for two weeks the patient had an attack of abdominal pain more severe than before. Dr. Coe saw her at this time. During the following week she was reported as growing worse and had become very feeble, and her physician feared that peritonitis was developing. Finally she had another attack of pain with apparent collapse, and an exploratory incision was made, only to find a normal pregnancy of three months. The patient recovered from the operation and aborted later. In this case not only was an extra-uterine pregnancy incorrectly supposed to be present, but the electricity failed to kill the fœtus.

Buckmaster[2] reports the case of a patient who had fibroid tumors of the uterus and who became normally pregnant. Not being aware of the pregnancy, at the third month of gestation he put the woman under chloroform and passed twenty milliampères of a galvanic current for twenty minutes; in spite of this the patient went to term and was delivered of a living child.

Bovee[3] reports the case of a patient who had formerly been a patient of Chadwick's, of Boston. Dr. Chadwick had diagnosed the case in the ninth week and applied electricity in the eleventh week, and, he thought, killed the fœtus. At the end of five months Bovee delivered a five months' fœtus from the vagina. It was pronounced a five months' fœtus by Billings and Lamb in Washington, and later by Minot in Boston, who believed that the pregnancy had advanced to one hundred and fifty-three days, and could not reconcile this with the opinion that the fœtus was destroyed by electricity in the eleventh week.

Wylie[4] records a case in which electricity had been used under ether several times and yet the fœtus lived. It was finally killed by injections of morphine and as a result of this treatment the contents of the sac suppurated and the patient lost her life, an operation failing to save her.

I could give a number of other failures to kill the fœtus, but will mention only one more. The case has not yet been published, but full details will soon

[1] American Journal of Obstetrics, January, 1890, p. 95.
[2] Ibid., p. 74.
[3] Annals of Gynecology, July, 1890, p. 538.
[4] American Journal of Obstetrics, vol. xxiii. No. 2, 1890.

be given the profession. The woman was a patient of Dr. Morris J. Lewis, of Philadelphia. She was seen in consultation by Dr. B. C. Hirst and extra-uterine pregnancy diagnosed. Dr. G. Betton Massey was called in to apply electricity for the destruction of the fœtus. Six treatments were given, the galvanic and faradic currents being used on alternate days. Over one hundred milliampères of the galvanic current and the full force of the faradic current were given at each of the respective sittings. The three attendants then agreed that if the fœtus was not dead they could not kill it. The woman went on from bad to worse, and a month later Dr. C. B. Penrose removed a growing tubal pregnancy.

Further comment on this is unnecessary. It is simply folly to insist that electricity is sure death to the fœtus in the face of such evidence.

2. The dangers of delay necessarily incident to the treatment.

These are by no means small. Although a tubal pregnancy *may* continue to grow until the thirteenth week or later without rupturing, yet it only too often ruptures much earlier. I assisted Dr. Montgomery[1] in an operation on a patient to whom this accident happened in the fifth or sixth week. Electricity was being applied at this time.

Montgomery[2] records yet another case in which the rupture took place at the fifth week.

Engelmann[3] records a case of the disease in which rupture took place earlier than the fourth week, as proven by the size of the gestation-sac and the fact that no menstrual period had been missed.

Dr. R. P. Harris[4] says that he knows of two cases in which rupture occurred as early as the third or fourth week. Rupture may occur at any period, and no one can predict just when. For this reason, if a diagnosis is made, or if the disease is strongly suspected, it is not safe to adopt a treatment which avowedly must continue for a number of days, and probably for a week or two. A case in point is one which was taken by a New York physician to the office of Dr. T. Gaillard Thomas for an opinion. Dr. Thomas diagnosed extra-uterine pregnancy, and advised delay and the use of electricity. While in the street, on her way home from the doctor's office, the rupture took place, and the woman had a narrow escape from death. These cases and those seen by Dr. Formad, the coroner's physician of Philadelphia, show that rupture may take place at any time between an early and a late period. A close inspection of the literature of the subject will give the most sceptical plenty of material for thought.

3. The dangers during the treatment.

These dangers are strenuously denied by many.

Brothers[1] reports four cases in which alarming symptoms supervened during or immediately after the treatment, and there are many others in his list in which minor bad symptoms followed.

Coe[2] records a case of extra-uterine pregnancy at the second month, which he saw in consultation, in which the diagnosis was confirmed by the late Dr. Hunter. The faradic current was used, the sac ruptured, and it was easy to detect gradual increase of the resulting hæmotocele.

Janvrin[3] reports a case in which death followed the third application of electricity, on account of rupture of a vessel in the wall of the sac.

4. The harm done in case of a mistaken diagnosis.

It is contended that no harm can possibly be done in the event of a mistaken diagnosis. I have not had time to go over the records, and look up these cases, but will refer to one case reported by Dr. T. Hewson Bradford, and which I myself saw, in which electricity was given by Dr. G. Betton Massey through a pelvic mass, the diagnosis being incorrect. The case proved to be one of intra-ligamentary cyst. During two applications the woman became so alarmingly ill that the treatment was discontinued, and the knife resorted to by consent of all the physicians concerned in the case. I have during the past two years seen at least half a dozen patients go to bed and remain there for a week or more with an alarming attack of peritonitis after a single treatment in the hands of an expert. Everyone who has any experience with electricity must have seen similar cases, and know only too well that harm may result from sending a current of electricity promiscuously through pelvic growths.

5. The dangers to the patient after the treatment is finished.

Brothers[4] records two cases (Lusk and Chadwick) in which suppuration with discharge of the fœtus occurred in consequence of the use of electricity.

J. P. Tuttle[5] records a case in which, after the electrical treatment, he delivered a four-months' fœtus *per rectum*.

G. M. Tuttle[6] records a case of between two and three months, in which the faradic current was applied daily for ten days. He says: "In this case the thorough and intelligent use of electricity for the purpose of destroying the embryo was followed by no evident amelioration of symptoms, which, on the contrary, continued to grow worse with an uninterrupted increase in the size of the tumor." In this case, not only was the danger not abated,

[1] Annals of Gynecology, July, 1890, p. 542.
[2] Ibid., p. 536.
[3] Ibid., May, 1890, p. 376.
[4] Ibid., March, 1890, p. 292.

[1] American Journal of Obstetrics, vol. xxiii. No. 2, 1890.
[2] Ibid., April, 1890.
[3] Transactions of the American Gynecological Society, 1887.
[4] American Journal of Obstetrics, vol. xxiii. No. 2, 1890.
[5] Annals of Gynecology, February, 1889.
[6] American Journal of Obstetrics, January, 1890

but the electricity failed to kill the product of conception.

The claims made by the electricians that after the death of the fœtus all trouble is over, would seem to be disproved by these cases, amounting to about eight per cent. of the whole number of women treated, and supposed to be cases of ectopic gestation. In addition to these the literature is full of similar cases, in which the fœtus died from causes other than electricity. The after-results, however, of such cases can differ in no way from those killed by electricity. If the claims of the electricians are correct, then after the death of the fœtus, from whatever cause, the results must be the same, viz., absorption and shrinkage.

Thompson[1] records a case of extra-uterine pregnancy in which death of the fœtus occurred between the second and fourth months. Later, the fœtal bones were passed by the bladder.

Goelet[2] records a case suffering from supposed pelvic hæmatocele. A vaginal incision was made behind the uterus, and a fœtus of about the third month, in a state of decomposition, was removed.

Tuttle[3] records three cases in which the fœtus died early, and after varying periods of continued suffering the sac and contents had to be removed.

And so it is all through the literature—the number is legion. In addition to these cases, Hanks[4] reports that in a series he has collected, in four cases the fœtus sloughed into the rectum, in one into the bladder, and in four into the uterus.

Brothers[5] has tabulated fifty cases of supposed extra-uterine pregnancy treated by electricity, all he could collect from literature, and yet, strange to say, he has missed many with bad or indifferent results, some of which are included in this paper. Of these fifty cases fifteen are noted, after periods of from three months to three years, as still having pelvic masses, some of them the size of a goose-egg, a pigeon-egg, a man's fist, etc. Does anyone doubt that the time is coming when some of these very women will have a repetition of their troubles, and will require an operation for relief? Is this the kind of cure the electricians boast of?

6. The doubtful nature of the disease in many of the cases reported as treated in this manner.

In connection with this, does not the fact that out of the grand total of fifty, fifteen cases still have masses of considerable size in their pelves, form presumptive evidence that some of the cases had something besides ectopic gestation? If the difficulties of diagnosis have not been overcome by the surgical men (as I have proven by many cases reported elsewhere),[1] is it strange that the electricians should make as large a proportion of mistakes in the same direction? The same gentlemen who have verified the diagnosis in many of the electrical cases, and on whose opinion the truth of the diagnosis is based, have been proven to be mistaken in other cases in which they made just as positive diagnoses, and have themselves repeatedly said that they have over and over made the mistake. By what reasoning can it be claimed that they are infallible in just the cases in which it is impossible to verify the diagnosis?

Nor is this presumptive evidence all that there is against the electricians on this point. Wylie[2] has proven by post-mortem examination that three supposed cases of ectopic gestation, treated by electricity, were not such at all.

In three more (McBurney, Garrigues, and Trask) the fœtus was discharged by the natural passage. Almost to a certainty these were cases of normal gestation. It is not at all strange that such a mistake in diagnosis was made; there are many cases on record in which a normal pregnancy was overlooked, even after the sound was repeatedly passed. The case of Coe, quoted above, in which electricity failed to relieve, and an exploratory laparotomy revealed a normal pregnancy, is a case in point. Had the exploration not been made, that case would have been on record to-day as a case of interstitial pregnancy in which the electrical treatment forced the fœtus into the uterus; and with exactly as much ground for the supposition as the three cases of McBurney, Garrigues, and Trask.

I cannot review each of the reported cases in detail, but shall refer to a few, and show how doubtful was the diagnosis even as reported. But, first, let me call attention to the cases of Cushier and Harrison, in each of which the credit for the cure has been given to electricity, to which it does not belong.

T. Gaillard Thomas[3] saw the case of Cushier in consultation, and a diagnosis of ruptured interstitial pregnancy was made. Operation was thought of, but was abandoned, partly on account of the condition of the patient, and because the tumor, which had suddenly appeared, was entirely due to the rupture. Cushier says: "During the next few days there was a most marked improvement. The tympanites entirely subsided, and pain was completely controlled . . . the tumor could now be felt as a circumscribed mass . . ." After

[1] American Journal of Obstetrics, August, 1889.
[2] Ibid., January, 1890. [3] Ibid., January, 1890.
[4] Transactions of the American Gynecological Society, 1888, p. 361.
[5] American Journal of Obstetrics, vol. xxiii. No. 2, 1890.

[1] THE MEDICAL NEWS, December 20, 1890.
[2] Transactions of the American Gynecological Society, 1888, p. 391.
[3] Ibid., 1884, p. 167.

this, fearing that the embryo *might posssibly* be still living, although the evidence was against this, and the patient was fast getting well, a faradic current was used, and now, forsooth, this is claimed as an electrical cure. It was clearly a case of spontaneous cure.

The case of Harrison,[1] which was seen by T. Gaillard Thomas, was a very similar one. Harrison himself says that the fœtus was dead when the treatment began, and he protested against its use—another case of spontaneous cure for which electricity has assumed the credit.

Cocks[2] called T. Gaillard Thomas to see a woman who had menstruated last on December 13, 1883. About the middle of January she began to suffer from pain, nausea, and vomiting. On March 27th, when seen by Thomas, a tumor about the size of a man's fist was discovered to the left of the uterus, and gave the sensation of a tense sac filled with fluid. The following day, or about three and a half months after the last menstruation, the faradic current was passed, and was applied daily for eight days with no change either in the condition of the tumor or the patient. Two weeks later galvanism was begun, sometimes with and at other times without ether, and was continued for eight or nine days, at the end of which time it was found that but little change had taken place. This was at between four and five months. On September 15th, about nine months after the beginning of the attack, it is said: "The pains were much less severe in character, and, though occasionally paroxysms occur, yet they are less violent than formerly, and much less frequent. . . . On examination the tumor is still found, but decidedly smaller, less tense, and less painful on pressure." From the history of this case there is not the slightest possibility of its having been a case of ectopic gestation; even Thomas says: "I freely confess that I am not entirely positive about the correctness of my diagnosis," and I think anyone who will carefully read the details as he gives them will quite agree with him in his doubt.

Lambert and Jones[3] record a supposed case of ectopic gestation which T. Gaillard Thomas saw in consultation. I will only remark that all the evidence of this disease being present is contained in an extremely unsatisfactory history. At the consultation Drs. Thomas and Jones pronounced the case one of ectopic gestation, her attending physician, Dr. Lambert, was in doubt, and Dr. Fordyce Barker rejected the diagnosis. In the words of Thomas, "the majority ruled," and the electrical treatment was instituted. The woman went home to the country at the end of ten days and at the last examination had still a pelvic tumor as large as a hen's egg. Is the profession ready to accept obediently that diagnosis? I think not.

The two cases of Allen[1] are both more than doubtful. In the first one the history of ectopic gestation is far from convincing, and three years after the treatment there was a well-defined tumor, the size of a large fist, very little if any smaller than before treatment. The second case is even more unsatisfactory from a diagnostic point of view, and the tumor still existed of almost its original size when Allen reported the case.

In the case that Wilson[2] reports, he himself says that he is "not satisfied it was a case of extra-uterine pregnancy." Dr. Howard saw the patient and was opposed to the diagnosis. There is no need to produce more evidence on this point. Any fair-minded, experienced man who will go thoroughly over the detail of these cases will soon become convinced that a large number, if not the majority of them, were mistakes in diagnosis. They at least are so dubious that they should have no place in scientific discussion.

After the preceding it is needless for me to say that I am strongly in favor of the treatment of extra-uterine pregnancy in its early stages by laparotomy, whenever and wherever diagnosed or strongly suspected. When we carefully analyze the cases which have been treated by electricity, eliminating those which are plainly mistakes in diagnosis, or of too doubtful a nature to be of any scientific value, and then place the failures and dangers of the treatment by the side of the remaining (or even by the side of the total number claimed by the electricians), the proportion of disaster is so overwhelming in comparison to those of laparotomy, that to my mind but one conclusion is rational.

In closing I wish to direct attention to the fact that two of the gentlemen who were among the most ardent admirers of the electrical treatment a year ago, have at last given up their idol. In 1889, Dr. E. E. Montgomery[3] said: "Electricity affords an agent for the destruction of fœtal life, which experience discloses can be relied upon for the arrest of development and the speedy and safe cure of our patients." In 1890,[4] he says: "I have been led to change my mind by this case, and another in which Dr. Baldy assisted me. This case with the last one has shaken the faith I had in the use of electricity."

Dr. George J. Engelmann[5] says that he had for-

[1] Transactions of the American Gynecological Society, 1882, p. 230.
[2] Ibid., 1884, p. 172.
[3] Ibid., 1884, p. 176.

[1] American Journal of Obstetrics, 1872, p. 161.
[2] Ibid., 1882, p. 205.
[3] Transactions of the American Association of Obstetricians and Gynecologists, 1889.
[4] Annals of Gynecology, July, 1890, p. 542.
[5] Ibid., May, 1890.

merly urged the use of electricity in this disease, but he adds: "Increased experience has caused me to waver, and a case recently reported by Dr. Mooney, of this city, has appeared to me so convincing an argument in favor of *immediate operation* at *whatever period* extra-uterine pregnancy may be detected, that I am now an earnest advocate of surgical interference in all such cases."

THE TREATMENT OF FAILING CIRCULATION, WITH SPECIAL REFERENCE TO THE USE OF STRYCHNINE.

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When a physician is confronted by a case in which there is either sudden, gradual, or threatened failure of the circulation, the pregnant question arises—What is he to do? Naturally, his first thought is of some drug which, either from his own experience or that of others, he knows has been successful in combating or postponing this formidable complication, and the remedy he most desires is one that will act promptly and, as nearly as possible, entirely upon the circulatory apparatus. His judgment in the selection will be guided, if he be not merely an empirical therapeutist, by the cause of the cardiac weakness, the disease and condition of the patient, and the physiological action of the drug. It may seem unnecessary to make this preliminary statement, or even to broach the subject at all, to those whose high positions as teachers of medicine give them unlimited opportunities for experience and observation, and may even seem truistic in view of the fact that most of the matter here discussed can be found in so many text-books. But when it is considered that the average practitioner is prompted to request a consultation when this symptom begins to show itself, and that, as a matter of fact, comparatively few are able to cope with it, the writer may be pardoned if he omits an apology. He submits this paper with some diffidence, to invite a discussion upon this important subject, and in the hope that it will suggest to the minds of those who are familiar with the treatment of so-called heart-failure the usefulness of a publication of their knowledge of it.

There are numerous instances of the heart ceasing its function when it cannot be said that life would have flown under proper treatment, and it is in these cases that there is shown either the lack of proper remedies or the absence of a sufficient amount of medical skill, if not negligence. As previously stated, the remedy should act upon the circulatory system, and in a way that will increase the strength of the cardiac contraction and promote the rapidity of the circulation; and upon other parts of the organism it should not have any, or, at least, only a minimum, antagonistic concomitant action, which would tend to annul or counterbalance the prime effect upon the heart.

A glance at the physiological action of the cardiac tonics will show that some of them have a very disagreeable behavior in this respect, and in none is it so well marked as in the case of digitalis, which is generally adopted as an efficient agent. Quoting the words of an eminent writer, digitalis "prolongs the diastole and increases the vigor of the systole," an effect most desirable, because it gives the ventricles time to fill and to expel a maximum amount of blood into the lungs and arteries, but, unfortunately, it at the same time contracts the arterioles and raises the blood-pressure, thus lessening the rapidity of the blood-flow and preventing a proper washing out of waste products from the tissues. In addition to this, if large doses be given, it impairs the irritability of the sensory and motor nerves and muscular fibres, and interferes with reflex action, effects that cannot fail to retard nutrition. Clinically it has been found unsatisfactory in those low states of the system brought about by high temperature and degeneration of the muscular tissues—notably of the heart itself—such as are found in typhoid fever. Recently a scientific teacher of therapeutics was quoted as recommending that digitalis be employed in typhoid fever, and that he had had most excellent results from its use. It is difficult to understand this opinion, as the same writer states in his book that he has seen digitalis produce, even in therapeutic doses, a dicrotic pulse, and numbers of authorities have, both by their writings and lectures, condemned it. The late Dr. James H. Hutchinson was very pronounced in his opinion against the employment of the drug in fever, and once told the writer that he knew of several cases of sudden death occurring in the course of fever that were unquestionably due to the digitalis administered. In the failure which accompanies simple organic disease of the heart itself, and in that which follows the shock due to hæmorrhage and similar conditions, digitalis is the proper remedy; but in the class of cases mentioned above it does not fulfil the requirements. The slowness of its action precludes its use in acute heart-failure, for, though given hypodermically, it is from two to four hours before its peculiar effect is manifested. Clearly, then, digitalis should be employed in only a limited class of cases, and is not the drug for the majority of emergencies.

Ammonia has been spoken of as the most powerful cardiac stimulant known, but its action is transient and of short duration. In some cases it does not act well. Wood speaks of it as being most serviceable in purely functional cardiac failure, and

as not a reliable agent in that accompanying the adynamic fevers. To obtain from it a satisfactory effect it must be administered at short intervals, from every half-hour to one hour, and an insuperable objection to it is the fact that it cannot be used hypodermically without producing an inflammation at the site of the injection; and, in a disease like typhoid fever, fatal sloughing might result. It can be administered by the veins, but this is always a dangerous procedure, and it is doubtful if it be effective, as strong alkalies injected into the circulation of animals destroy the red corpuscles. It possesses the advantage of not being followed by the depression of the nervous system which constitutes so objectionable a feature in the case of alcohol, but from its chemical properties it is difficult to use in states of unconsciousness.

Atropine is justly regarded by many as a cardiac stimulant, and Harley has highly recommended it; but it is really more of a respiratory stimulant, and is only adapted to certain cases. Bartholow is inclined to doubt its usefulness in cardiac failure, since it exhausts the irritability of the heart ganglia; but, since the preliminary period of stimulation is well marked, he advises its use in temporary depression of the heart's action. When given in large doses it locks up the secretions and must necessarily interfere with nutrition and lessen the excretion of waste products, and, on this account, cannot be safely employed in uræmia.

Alcohol is a safe and effective heart-stimulant when intelligently used, and is probably the best general tonic in the list. It possesses the advantage of being comparatively non-toxic, and can be administered for a longer period than some of the other heart-tonics, without deleterious effects. Its influence upon the processes of nutrition renders it especially adapted to those long-continued cases of gradual circulatory failure that are encountered so frequently in the low fevers. But its effectiveness in cases of sudden or profound cardiac failure occurring in the course of acute maladies, such as pneumonia, in which large amounts must be given, either by the mouth or hypodermically, is open to doubt, since the profound depression that follows its exhibition in large doses must certainly conduce to an unfavorable result. It may be more correctly regarded as prophylactic rather than as an active combative agent.

Caffeine and cocaine have lately been much used as heart stimulants, and they are of undoubted value in simple weakness, when there is no reason to suspect that the weakness is a premonition of beginning failure. The action of the former is fugacious, owing to its chemical instability, and the writer has seen the delirium of typhoid fever markedly increased by cocaine. They, like alcohol, may be better classed as prophylactics.

Nitroglycerin is an active remedy in certain cases in which the heart is slow and weak. It paralyzes the inhibitory centres, dilates the arterioles, and with the increasing heart-action thus induced the circulation is rapidly promoted. A very interesting article on the comparison between the action of this remedy and digitalis lately appeared in the *British Medical Journal*, which serves most aptly as evidence that neither drug can be depended upon in all cases. The transitory impression made upon the heart by nitroglycerin compels the drug to be given in frequently-repeated doses, and its powerful toxicity renders it too dangerous for general employment. The writer administered it once with most happy results in a case of shock due to traumatism, the pulse increasing in three and one-half hours from 40 per minute to 78. In such instances there is, of course, doubt as to the part played by the medicine. A rapid heart would be a contra-indication to its use.

Ether acts quickly and is effective in some instances of cardiac failure following traumatism, but the effect is not sustained, and it is not advisable to give it for more than a short time.

Strophanthus, sparteine, convallaria, and adonis vernalis have not as yet been sufficiently studied to be considered.

In the array of remedies that are criticised above it is seen that none of them fulfils the indications for relief that are presented by most cases of heart-failure, without at the same time exhibiting deleterious counter-effects. An agent which will sustain the circulation must not interfere with the resulting good effects of such action by any secondary manifestations, and until one can be found that will behave in this manner the problem must be met by such a combination of remedies and methods as will most nearly resemble the desired drug.

The writer considers strychnine, if not the best, at least one of the best, cardiac stimulants available. A study of its physiological action undoubtedly shows that it, too, has objectionable features, but fortunately they can, to a certain extent, be mitigated by the conjoint use of other remedies. Strychnine is very diffusible; it acts quickly, and the effect is sustained. When a medicinal dose is administered hypodermically the heart at once responds by an increase in the strength of its movements, the arterioles contract, and the blood-pressure rises. At the same time the irritability of the sensory and motor nerves and the excitability of the muscular tissue are greatly increased, thus promoting nutrition-changes and mechanically favoring a rapid blood-current. A spasmodic contraction of the renal capillaries is likely to occur if large doses

are given, but the interference with the kidney secretion can be obviated by diuretics having a selective action upon the urinary organs. Lately strychnine has been strongly recommended by some eminent observers as a reliable agent when other members of the group of cardiac tonics are contraindicated, and to the writer, who used it a great deal while resident physician in the Pennsylvania Hospital, it has proved very satisfactory. The stimulation is not confined to the circulatory system, but is general, and in many respects very much resembles the effects of heat. Its characteristic effect upon the spinal cord no doubt tones up, so to speak, through the sympathetic nerves, the digestive function, which with the diffused stimulation of the circulatory system must certainly result in a supply of better blood to the nerve-centres, and consequently to promotion of the vital functions.

A curious fact in connection with the action of strychnine is that the weaker the circulation the larger is the amount necessary. Its action seems to be in a way neutralized by the causes inducing the weakness, requiring in some instances rapidly-increasing doses to maintain the effect. Dr. C. B. Penrose informs the writer that he has given hypodermically as much as two grains of the sulphate of strychnine in twenty-four hours, with the result of successfully tiding the patient over a crisis.

This paper is intended as a preliminary to a more complete consideration of the usefulness of strychnine, and in a future article, now in course of preparation, the writer hopes to be able to indicate the extent and class of cases in which it can be effectively employed.

MEDICAL PROGRESS.

Immunity against Tetanus and Diphtheria. — In the *Deutsche medicinische Wochenschrift*, December 4, 1890, Drs. Behring and Kitasato publish the results of their experiments on rabbits and mice regarding the production of immunity in them against tetanus and diphtheria. The results regarding the former disease were the most definite.

It was found that immunity is based on a power communicated to the liquor sanguinis, apart from the cells, to make innocuous the toxic substances causing tetanus. The method of imparting this property to the liquor sanguinis is not given, but its future publication is promised.

Not only did the animals treated by the method of the authors prove immune, but the serum of their blood when injected produced immunity in other animals.

If 5 c.cm. of this serum were allowed to remain in contact with 1 c.cm. of tetanus culture for twenty-four hours, a dose of the tetanus virus three hundred times as large as that which is ordinarily fatal could be introduced without causing any harm. It was also found that even during the progress of the disease the new method of treatment favorably influenced its course.

It is to be inferred from the paper that similar, though less definite, results were obtained with diphtheria.

It remains to be seen if these methods can be applied to man.

In the same journal, December 11th, Behring publishes the results of his researches regarding the production of immunity against diphtheria in animals. The experiments have so far led to no practical results, but are interesting to the pathologist and experimental therapeutist.

The author mentions five methods of producing immunity in animals susceptible to the disease. The first four are based on Pasteur's methods, and depend on the action of certain products of tissue-interchange obtained in the cultures or in the living animal organism.

The fifth method is original, and consists in the application of an inorganic substance, which in these experiments was peroxide of hydrogen (H_2O_2). That certain chemical agents have the power to impart immunity in other infectious diseases appears to be established by Kitasato's results in the prevention of tetanus by the previous application of solutions of trichloride of iodine, which are mentioned in the paper.

It is noteworthy that the animals made immune lost their power of resisting the virus after the repeated use and increased doses of the latter.

The facts that certain animals possess an immunity against diphtheria, and that the blood-serum of guinea-pigs which have been made immune has the power to neutralize the toxic properties of diphtheria virus, led the author to the idea that the immunity rested on certain properties of the liquor sanguinis. This theory stood the test made with the tetanus virus as previously described.

Of great importance is the fact mentioned in the second paper, that even if several limbs of a mouse are tetanically convulsed, and death under ordinary circumstances would be expected in a few hours, the experimenters invariably succeeded in curing the tetanus completely in a few days; a fact which shows the possibility of curing very acute cases of the disease.

A Case of Death from the Use of Bromoform in Whooping-cough.—In the *Journal de Chirurgie et de Pharmacologie*, November 20, 1890, Nauwalaers details a case in which bromoform was given for a cure of whooping-cough with a fatal result. A child aged one year and three months, presenting all the characteristic symptoms of whooping-cough, was ordered 2 drops of bromoform in an alcoholic solution eight times a day. At the end of a week there was no amelioration in the symptoms, and 3 drops eight times a day were ordered, the case being carefully watched. Three days later it was noted that the treatment was still of no avail, and the case persisted for another week without amelioration. Finally 12 drops of bromoform were given. Seven days later the child after receiving its regular dose passed into a state of profound stupor with great pallor, collapse, complete muscular relaxation, shallow respirations, feeble circulation, immobility of the pupils, and insensibility of the cornea. Notwithstanding injections of ether and the employment of artificial respiration, with electrical stimulation of the phrenic nerve and inhalations of nitrite of amyl the patient became much worse, and

finally, owing to the cyanosis which was present and the obstruction to the breathing which seemed to exist near the epiglottis, tracheotomy was performed, when it was noticed that the air which was expired possessed a pronounced odor of bromoform. Amelioration of the symptoms followed the operation, but the muscular relaxation persisted. Later all the early symptoms returned and hypodermic injections of caffeine and hot applications were resorted to. It was noted that the hypodermic injection rapidly produced a local ecchymosis, and shortly after this the child expired.

At the autopsy the pericardium was found to be normal and the pleural cavity free from adhesions. The lungs were of normal color, but contained a large quantity of liquid in the bronchial tubes, which was not purulent. The stomach was reddened, but otherwise apparently normal, but the duodenum was congested. The kidneys and spleen were unaffected. There was a large quantity of red liquid under the dura mater, although the pia mater was normal. The lateral ventricles of the brain were distended. It will be seen, therefore, that the changes produced by tne poison were sufficient to explain the fatal result. The author then details the clinical evidence in favor of the drug, and urges the conclusion that while bromoform is of great value in the treatment of whooping-cough, exercising both a curative and palliative action, it corresponds very closely with chloroform and is dangerous. Finally, that the treatment of poisoning by this drug should consist in the evacuation of the stomach by the use of emetics, in the use of artificial respiration and cardiac stimulants, and, if necessary, tracheotomy with inhalations of oxygen.

Masturbation in an Infant.—At a recent meeting of the Medical Society of London, DR. BEEVOR showed a male infant eleven months old who had been in the habit of masturbating since the age of four months. Erections were produced and at times a glairy mucous was said to exude from the urethra. The child had been circumcised, and bromides had been given, but without effect on the habit. No cause for the condition could be ascertained. There was no stone in the bladder; the urine was alkaline, but contained neither albumin nor phosphates.—*British Medical Journal*, November 29, 1890.

Granular Conjunctivitis.—The following treatment is recommended by TENLON in cases of granular conjunctivitis of a persistent type, with much photophobia. He orders one drop of the following collyrium to be instilled into the eye morning and night:

℞.—Distilled water . . . . ½ ounce.
Neutral sulphate of atropine . 1½ grains.

In the evening he introduces into the eye a very small piece of the following ointment:

℞.—Calomel, pure and thoroughly pulverized . . . . } 2 drachms.
Vaseline . . . . . 1 drachm.

He also finds it of service during the day to apply fomentations for as long periods as possible, consisting of the decoction of chamomile as hot as can be borne. At the same time it is well to administer internally cod-liver oil, syrup of the iodide of iron, and general tonics.

Treatment of Pneumonia.—In the earliest stage of pneumonia DR. EUGENE GRATZER (*Therapeutische Monatshefte*) prescribes a few large doses—4 grains each to adults—of calomel at intervals of three or four hours, with the best results, the fever being reduced and the disease running a mild course. In cases which are further advanced his favorite remedy is antipyrine given in 4-grain doses three times daily. He also prescribes as an expectorant the following:

℞.—Decoction of senega . . 2½ drachms.
Extract of opium . . 1½ to 4 grains.
Syrup of althea . . . 5 drachms.—M.
Dose, one teaspoonful.

In young children opium and morphine are avoided and cherry-laurel water is given.

During convalescence digestion is stimulated by the following mixture:

℞.—Dilute hydrocyanic acid . 15 minims.
Water . . . . . 4 ounces.
Spirit of nitrous ether . . 1 drachm.
Syrup sufficient to make . 6 ounces.—M.
One tablespoonful every two hours.—*Provincial Medical Journal*, December, 1890.

Myxœdema Treated by Thyroid-grafting.—At a recent meeting of the Medical Society of Paris the notes of a case upon which MR. WALTHER had operated for myxœdema by transplanting the thyroid of an animal were read. The operation was performed on September 3, 1890, the patient being a woman about forty years old. The graft was placed under the right breast and the wound healed by first intention. On September 6th, menorrhagia, which had been very troublesome, ceased. The amelioration in the patient's general condition is no less striking. The puffiness of the face has diminished and the pseudo-lipomatous condition is much less marked. It is in the functional disturbances, however. that the improvement has been greatest. Her speech has become much more clear and she walks more easily.—*Lancet*, November 29, 1890.

An Application for Gout.—The *St. Louis Medical and Surgical Journal* quotes the following:

℞.—Flexible collodion, Ether } of each . 5 parts.
Salicylic acid . . . . 4 "
Muriate of morphine . . . 1 part.—M.
This should be applied to the affected toe.

Arsenic in Phthisis.—LADENDORF employs the following solution of arsenic in hypodermic injections to reduce the fever of phthisical patients:

℞.—Fowler's solution . . . 30 minims.
Distilled water . . . . 2½ drachms.
Hydrochlorate of cocaine . . 1 grain.

Of this half of the contents of an ordinary hypodermic syringe is injected. This injection is to be employed once every third day. It seems probable that this method possesses no advantage over the use of arsenic by the mouth.

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HYPNOTISM AS A CLOAK FOR CRIME.

FOR the first time, we believe, in the history of medical jurisprudence hypnotism has been brought forth as an explanation of and a defence for crime. The Eyraud-Bompard trial, just closed in Paris, has a lasting interest far exceeding that which attaches to its merely sensational and revolting details. Both in its scientific and its judicial aspects the trial was an extraordinary one, and for its scientific features alone will be long remembered and referred to. It will, no doubt, have a permanent influence upon the jurisprudence of insanity and crime, not only in France, but in other countries.

The reasons for this are not altogether simple, and will bear some examination in detail. The first and chief reason, in our opinion, is the fact that a kind of mysticism has hung about this word "hypnotism," not only in lay, but also in medical, parlance. This trial will help to dispel the mysticism. The word, and what it stands for, have not been subjected, even in medical circles, to a strict criticism; while in extra-medical circles, as in the newspapers and in daily conversation, the term has been given a dignity and significance which it by no means deserves, and which make it, and the ritual for which it stands, a ready means for mystification and fraud. It is not to be wondered that the time has come for this convenient ceremonial to be made the excuse for crime, just as it has more than once pandered to vice and defrauded the credulous.

The fundamental fact underlying hypnotism is "suggestion." All else is mere by-play—the mere histrionic tricks or draperies which are meant to add force and efficacy to that one central act. Hypnotism, in other words, is simply the power which one mind has to instill certain dominant ideas or purposes into another mind; hence it is as old as the human race, and has been in operation in one way or another ever since man first tempted man to evil or persuaded him to good. Doubtless in some very "susceptible" persons some unusual psychological effects may be procured. Such persons are usually hysterical, semi-hysterical, or credulous—a class fond of the marvellous, with little ability or wish to rely upon themselves in thought and action, and especially fond of any dramatic scene which includes themselves as conspicuous actors. Hence, it is difficult to judge in some of these cases how sincere the subject is, or how far he or she is merely playing a part. Even the accomplished mind of Harriet Martineau was so weak as to receive suggestions of mesmeric influence, and attributed to this a power that which was simply a revived moral purpose within herself. So the criminal Bompard has sought in vain to attribute to hypnotism her own evil devices. In the hands of the physician who attempts with mirrors, bright objects, and a meaningless rite to impose upon the credulous or the sick the process comes perilously near quackery; and on the witness-stand his testimony must be open to grave suspicion or doubt.

The Eyraud-Bompard trial displayed this quackery to its extreme limits, and exposed it to the gaze and criticism of the world. No one doubts that Bompard received evil suggestions from Eyraud, and that Eyraud received evil suggestions from Bompard. Thus conspiracies and crimes have ever been hatched. But what student of a rational psychology will believe that Eyraud stole the "will" of the luckless Bompard, put her under a "hypnotic spell," in which she led a "dual existence," and so with her wrought out a scheme of murder, concealment, theft, and flight (involving many details of preparation, a trip to London, etc.), in which hypnotic state this Parisian demi-mondaine was unconscious of evil and without blame?

Some features of the trial are noteworthy. The

medical witness who supported the theory of hypnotism was on the stand, so it is reported, four hours, and was allowed by the court the greatest latitude. The presiding judge, however, refused very wisely to permit any hypnotic *séance* to be had with the prisoner in open court. The verdict, in spite of the hypnotic theory, was a just one, and the mercy extended to the female prisoner all that her sex and age could expect.

SPECIAL ARTICLES.

THE PRODUCTION OF IMMUNITY FROM DIPHTHERIA.

BY E. A. VON SCHWEINITZ, PH.D.,
AND
W. M. GRAY, M.D.,
OF WASHINGTON, D. C.

IN view of the interest which is at present being taken in biochemical research, and the impetus which has been given to investigation in this line, we deem it advisable to make a preliminary statement in regard to the work which we have conducted in producing immunity from diphtheria in animals. The disease-germ which we have used is Klein's bacillus, which is probably identical with the Klebs-Löffler bacillus. Without going into details, we may state that we have succeeded in obtaining a chemical substance which renders guinea-pigs treated with it insusceptible to diphtheria upon subsequent introduction of the strong virus into the system, while the control guinea-pigs died in from twenty-four to forty-eight hours.

We further believe that the experiments being made will demonstrate that we have a substance which will serve to control or prevent diphtheria in man. That methods for the treatment of typhoid fever, tetanus, and other contagious diseases can be worked out in a similar way is undoubtedly true, though it may require a long series of experiments to demonstrate this conclusively.

DECEMBER 24, 1890.

BRIEF NOTES ON NINE CASES TREATED BY KOCH'S LYMPH.

BY EDWARD CHARLES WENDT, M.D.,
OF NEW YORK.

SEVEN of these cases are under observation at the St. Joseph's Orphan Asylum and two at the New York Infant Asylum. These notes are necessarily brief, and must be regarded as in the nature of a preliminary communication. The lymph was obtained through the courtesy of Dr. L. Weber, of New York.

SMALL INITIAL DOSES.—Most of the cases being those of young children, the initial dose has generally been only one-quarter of a milligramme—*i. e.*, 0.00025 gramme. It is to be remembered that in using Koch's lymph we are employing a very powerful agent, and that we are still in the experimental stage of clinical investigation regarding its efficacy. It has not been demonstrated that the larger the dose the more powerful the effect for good; while, on the other hand, the possible harm would certainly appear to be in direct proportion to the quantity of lymph injected. The smallest dose that is capable of producing a decided reaction ought to be regarded as sufficient to excite those tissue-changes upon which the curative effect of the lymph is supposed to depend.

These remarks are by no means offered in a spirit of criticism of those who employ the usual 0.001 m. initial dose. They are merely intended to call attention to the possibility of benefiting our patients without incurring the risk of unpleasant disturbances.

TIME AND INTENSITY OF REACTION.—In all undoubted cases of tuberculosis the injection of Koch's lymph was followed by a febrile reaction. But the time of its first appearance, as well as its intensity and duration, was subject to wide variations. The highest temperature thus far recorded has been 104.3° F. Subnormal temperatures have not been observed. Alarming symptoms have not developed, although the malaise and restlessness of some of the children have been very marked. Signs of local irritation of moderate intensity have appeared at the site of inoculation in two cases. The injections have been made into the subcutaneous tissue of the abdomen, back, or thigh, preferably the first-mentioned region.

CASE I. *Strong hereditary predisposition to phthisis.*—Girl, aged eleven years. Parents both died of consumption when comparatively young. Her only sister is now in the last stage of phthisis. This girl is pale and delicate in appearance, chest flat, cervical glands very slightly enlarged, no physical signs relative to lungs, no cough. Small eater.

December 24, 1890, 2 P.M. First inoculation, 0.00025 gramme. No reaction. Temperature normal.

25th. Everything normal.

26th, 11 A.M. Second inoculation, 0.0005 gramme. 2 P.M., temperature 99.2° F.; at midnight, 98.2° F.

27th, 11 A.M. Third inoculation, 0.001 gramme. 2 P.M., temperature 101° F.; 9 P.M., 99.2° F.

28th. Fourth inoculation at noon, 0.001 gramme. Temperature did not rise above 99.3° F.

29th. Fifth inoculation at noon, 0.002 gramme. At 3 P.M., rise in temperature to 100.8° F.

The peculiar interest attaching to this case is due to the fact that our ordinary methods of examination would not permit us to say more than that the girl was likely to have phthisis later on. But if the

occurrence of distinct reaction after the injection of Koch's lymph is really pathognomonic of the presence of tubercle, then this girl is already in the first stage of tuberculosis. And it is precisely in this class of cases that the curative effect of the lymph will probably find its widest sphere of applicability. Until now this girl has developed no cough. In fact, apart from temporary malaise and a decided febrile reaction, the lymph has produced no appreciable effect whatsoever.

CASE II. *Ozæna scrofulosa, and lymphadenitis of neck.*—Girl, aged nine years, strumous. Ulcerating eczema of nose, recurrent phlyctenular keratitis.

December 24. 0.00025 gramme injected: no reaction.

25th. 0.0005 gramme, followed by highest temperature of 98.3° F.

27th. 0.001 gramme, followed by distinct reaction. Temperature 100.3° F.

28th. 0.0015 gramme, followed by rise of temperature to 102.2° F.

29th. Temperature in morning 99° F. Inoculation of 0.002 gramme at noon. At 3 o'clock P.M. the temperature had risen to 100.2° F.

This girl developed considerable cough, although an examination of the lungs before treatment was absolutely negative. The keratitis rapidly disappeared. Around the nose large red blotches appeared, which later resembled the erysipelatous reaction seen in lupus.

CASE III. *Hip-joint disease.* (*Service of Dr. F. Kammerer.*)—Girl, aged three years. Left hip-joint flexed, adducted, and fixed. Limping since one and a half years old. Previous treatment by extension. Abscess opened some time ago.

December 26. First inoculation of 0.00025 gramme at noon. At 2 o'clock P.M. temperature 99.3° F. At 4 o'clock P.M. temperature 100° F.

27th. 0.0005 gramme injected. Reaction to 100.3° F.

28th. 0.001 gramme injected. Temperature remained stationary at 100° F. all day.

29th. 0.0015 gramme injected. Temperature rose to 102° F. in three hours. No signs of local reaction at hip-joint up to this day.

CASE IV. *Hip-joint disease.* (*Service of Dr. F. Kammerer.*)—Girl, aged five years, taken ill about one year ago. Gradual development of symptoms. Extension treatment at first successful. Relapse this fall. Has failed of late.

December 26. First inoculation of 0.0005 gramme. Highest reaction, temperature 100.3° F.

27th. Injection of 0.001 gramme. Reaction to 102.2° F.

28th. Injection of 0.001 gramme. Reaction to 102.0° F.

29th. Injection of 0.0015 gramme. Temperature three hours after injection 101.8° F. It should be stated that in this case the temperature did not remit to the normal point, but fluctuated between 99° and 100° F. even during the time when it should have been normal. No local reaction at hip-joint. Movements more painful than at beginning of treatment by inoculation.

CASE V. *Tubercular glands in neck and submaxillary region. Scrofulous affection of eyelids and nose.*—Girl, aged eleven years. Two years ago severe chorea, which yielded to large doses of arsenic (up to 15 drops of Fowler's solution three times daily). Has lost flesh lately. A few suspicious râles at both apices.

December 27. First inoculation of 0.0005 gramme at noon.

Temperature at 2 P.M. 100° F.; at 4 P.M. 101° F.; at 6 P.M. 102° F.; at 9 P.M. 103.2° F.

28th. Second inoculation at 1.30 P.M. of 0.00075 gramme. Temperature was 101° F. in the morning (*i. e.*, incomplete recovery from reaction). At the time of this injection it was said to be normal, although I did not verify it.

Temperature at 3 P.M. 102° F.; at 5 P.M. 103° F.; at 7 P.M. 103.3° F.; at 9 P.M. 104.2° F.; at 12 P.M. 104.3° F.

Scarlatinoid rash all over body developed after second injection. Glands in the neck not larger than before treatment, and not painful. Feels sleepy and dull.

29th. Temperature at 9 A.M. 101.2° F.; at 12 noon 101° F. No inoculation to-day.

CASE VI. *Incipient phthisis.*—Girl, aged sixteen years. Mother died of consumption. Has been liable to "colds" for years. Supraclavicular spaces sunken in, chest flat. No emaciation. Slight cough. General condition fairly good.

December 27. First inoculation of 0.0005 gramme. Slight reaction to 99.3° F.

28th. Temperature normal at 8 A.M. Second inoculation at noon, 0.001 gramme.

By 9 P.M. temperature had risen to 101.3° F.

Scarlatinoid rash over body.

29th, A.M. Temperature normal. Injection 11 A.M. of 0.002 gramme.

Temperature at 3 P.M. 102° F. Has developed much cough and expectoration.

CASE VII. *Scrofula.*—Girl, aged five years. About one year ago convulsions and signs of meningitis. As she recovered it was held to be simple meningitis, although the symptoms were those of the tubercular variety. Also had pneumonia in 1889.

At present is pale and delicate in appearance. Glands at neck enlarged. A few râles (bronchitic) on left side of chest.

December 28. First inoculation of 0.00025 gramme. No reaction.

29th. Second injection of 0.0005 gramme. Reaction to 100.8° F.

The two remaining cases are under observation in my service at the New York Infant Asylum.

CASE VIII. *Tubercular (?) lymphadenitis of neck.*—Infant, aged nineteen months. In the latter part of November, 1890, Dr. Townsend removed some broken-down glands from right side of neck. Thick, bulging cicatrix. Some glands still enlarged. Healthy-looking, plump baby.

First inoculation, December 24th, 2.30 P.M.,

0.00025 gramme. No reaction, except slight rise of temperature following day to 100.4° F.

Second inoculation, December 26th, 0.0005 gramme. Temperature rose to 100.6° F.

Third inoculation, December 29th, 0.001 gramme. (Record not complete.)

CASE IX. *Incomplete resolution after pneumonia.*—Colored woman, aged twenty-three years. Condition previous to admission "delicate." Family history unknown. About the middle of October, 1890, she had an attack of pneumonia, from which she has not recovered. Temperature during height of attack not above 103° F. Signs of consolidation persisted, even after fever subsided. Cough, with expectoration, occasional night-sweats, and deterioration of general health were observed. During the month of December her temperature became almost normal, no hectic. Two weeks before first inoculation highest temperature was 99.5° F.

First inoculation, December 24th, 2.15 P.M., 0.00025 gramme, temperature normal at time. Slight reaction to 99.6°, but subjective symptoms more marked.

25th. Slept poorly night before. Anorexia, nausea, malaise, pain in head and joints. Coughs much more than before injection. Later she vomited twice. Temperature that afternoon (*i. e.*, twenty-four hours after first inoculation of one-fourth milligramme), 101.2° F.

26th, A.M. Feels much better after a good night. Second inoculation of 0.0005 gramme, followed by milder reaction. Temperature 100.6° F. Considerable cough. By December 29th temperature back to normal. On that day third inoculation of 0.001 gramme. The area of chest-dulness is larger, but auscultation shows no appreciable change.

This case seems interesting on account of the race of the woman. So far as I know, the lymph has not hitherto been tried on colored people, and the decided reaction obtained after a minute dose, may give a hint as to caution in using it in negroes.

It was noticeable, also, in this case, that the defervescence of the febrile reaction was more gradual than would appear to be the rule.

712 MADISON AVENUE, December 29, 1890.

REVIEWS.

A COMPEND OF HUMAN ANATOMY, INCLUDING THE ANATOMY OF THE VISCERA. By SAMUEL O. L. POTTER, M.D. Fifth edition. Revised and enlarged. Philadelphia: P. Blakiston, Son & Co., 1890.

THE appearance of the fifth edition of Dr. Potter's book upon anatomy proves not only that he is a successful teacher, but also that this is another one of his works which does him credit and gladdens the heart of his publisher. Though it is marred by a rather lengthy and unnecessarily eloquent dedication, the style of the rest of the book is so clear as to permit of no misunderstanding on the part of the student, and there is no reason to doubt that the fifth edition will become even more popular than the previous issues.

RHEUMATISM AND GOUT. By F. LEROY SATTERLEE M.D., Ph.D. 12mo., pp. 83. Detroit: George S. Davis, 1890.

THE author of this brief essay writes with an earnestness born of personal experience. As he tells us in his preface, he was a martyr to the gouty and rheumatic diatheses, which he was able to overcome by the hygienic and therapeutic measures he here describes. There is, however, little that is original in his methods, and the book can be regarded only as a readable description of common-sense methods of treating two troublesome diseases.

ESSENTIALS OF DISEASES OF CHILDREN. By WILLIAM M. POWELL, M.D. Saunders' Question Compends No. 15. 12mo., pp. 222. Philadelphia: W. B. Saunders, 1890.

THIS book is arranged like the others of the series to which it belongs, and probably contains as much information upon the diseases of children as could be compressed in a book of this size. It is clearly written and has evidently been carefully prepared, and will doubtless prove useful to those whose want of time or of inclination prevents them from referring to larger works.

THE PHYSICIAN'S VISITING LIST FOR 1891. Philadelphia: P. Blakiston, Son, & Co.

THE fact that this visiting list has been published annually for forty years is sufficient guarantee of its excellence and popularity. In addition to the visiting list proper, it contains easily-accessible suggestions upon many of the emergencies that may arise in a physician's practice, and when he is too far from home to learn from his text-books the antidote for a poison that may have been swallowed, or the proper method of resuscitating a half-drowned person. True, he should know these things, but who does not occasionally forget, when he most wishes to remember? There are also dose-tables, tables of the metric system, a list of new remedies for 1890, rules for examining urine, a table for calculating the period of pregnancy, and other equally useful information. The arrangement for entering patients, visits, consultations, etc., is exceedingly simple, and the whole makes a thin, compact, and easily-carried volume.

CYCLOPÆDIA OF THE DISEASES OF CHILDREN, MEDICAL AND SURGICAL. By AMERICAN, BRITISH, AND CANADIAN AUTHORS. Edited by JOHN M. KEATING, M.D. Vol. IV. 8vo., pp. 1128. Philadelphia: J. B. Lippincott Company, 1890.

THE concluding volume of this already well-known work is devoted to diseases of the ear, eye, and nervous system, and to hygiene. It opens with an article of forty-nine pages by Dr. Charles H. Burnett on Diseases of the Ear in Children. A brief description of the anatomy and pathology of the ear is given, but the larger part of the article relates to diagnosis and treatment. The succeeding article, Affections of the Eyelids, Lachrymal Apparatus, Conjunctiva and Cornea, by Dr. G. E. de Schweinitz, will prove a most useful one to the general practitioner who is compelled to treat these diseases. The same may be said of the article on Diseases of the Eye, by Drs. Charles S. Turnbull and George M. Gould, and of that on Ophthalmoscopy; Local Diseases

and Functional Disorders of the Choroid, Optic Nerve, and Retina, by Dr. Charles A. Oliver. An interesting article of eighty-four pages on Physical Development is contributed to the section on Hygiene, under the joint anthorship of the Editor of the *Cyclopædia* and Dr. James K. Young. Full descriptions of the proper methods of developing the muscular system of children are given, and the paper is illustrated by a number of reproductions of instantaneous photographs of children and adults showing the mechanism of walking, running, etc. Another useful paper in this section is that on School Hygiene, by Dr. D. F. Lincoln. The article on the Construction of Children's Hospitals, by Dr. Lindley Johnson, seems almost unnecessary in a work of this kind, and, moreover, it is the most carelessly written article, so far as diction is concerned, in the four volumes. We are not sufficiently familiar with carpentry, masonry, and architecture to judge the correctness of the author's opinions. The two following articles, Juvenile Crime and Public Methods of Prevention and Reclamation, by J. Percy Keating, Esq., and Medico-legal Testimony, by Dr. Jerome Walker, are interesting and exceedingly instructive. Diseases of the Nervous System occupy more than one-half of the volume and include twenty-eight papers of more than ordinary merit; indeed, it is safe to say that no department of the entire *Cyclopædia* is more uniformly excellent. Among others there are articles on the Diagnosis of Diseases of the Nervous System, by Dr. Allan McLane Hamilton; Cerebral Palsies and Suppurative Meningitis, by Dr. Landon Carter Gray; Tubercular Meningitis, by Dr. A. Jacobi; Intra-cranial Tumors, by Dr. M. Allen Starr; Hereditary Ataxia and Locomotor Ataxia, by Dr. Charles L. Dana; Headache, by Dr. E. C. Seguin; and Insanity, by Dr. E. C. Spitzka.

We congratulate Dr. Keating and his publishers upon the successful completion of a work that no practitioner can afford to be without.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON OBSTETRICS AND GYNECOLOGY.

Stated Meeting of November 23, 1890.

DR. G. M. EDEBOHLS read a paper entitled

EXPLORATORY PUNCTURE OF THE FEMALE PELVIC ORGANS,

dealing with the differential diagnosis of slight enlargements, or "masses," which are situated either entirely within the pelvis, or which originate there and project but slightly above the brim of the true pelvis, and are recognizable only by combined abdominal and vaginal touch. As an aid in the differential diagnosis of such tumors, the author has systematically practised, for two years, a method of exploratory puncture of the female pelvic organs which he terms "abdominal puncture guided by combined vaginal and rectal touch." The method is practised as follows: The skin of the lower part of the abdomen is carefully disinfected. The middle finger of the left hand is passed into the rectum, and the index finger of the same hand into the vagina. With these fingers the ovary, tube, small tumor or mass is located. The finger in the rectum, if possible, reaches posteriorly to the upper limits of the mass, the finger in the vagina being applied to the lower limits. A point on the anterior abdominal wall directly over the centre of the mass is located by the carefully-disinfected fingers of the right hand. At this point a sterilized hollow needle is carried perpendicularly through the abdominal wall and the intervening tissues and organs into the centre of the mass. The fingers in the vagina and rectum fix the diseased structures, control the course of the needle, and guide it into that part of the mass which it is desired to puncture. An assistant draws the piston, while the operator's right hand firmly grasps the barrel of the syringe, thus steadying it and the needle.

The author has practised the method in more than seventy cases without having had the least untoward or disagreeable result. The important points of the procedure are (1) perfect asepsis, (2) immobility of the syringe and needle, (3) resistance of the temptation to bore about in the tissues with the needle.

The paper was discussed by Drs. A. F. Currier, A. H. Buckmaster, C. T. Jewett, A. P. Dudley, H. J. Boldt, H. C. Coe, and R. A. Murray. The consensus of opinion was against the operation. It was conceded that the method was certainly an ingenious one, and that it had apparently given good results in the hands of its originator. It was questioned whether there is any need of a diagnostic procedure which exposes a patient to the dangers of puncture of the intestines and peritoneum, with consequent peritonitis, and probably death, when the present good results are obtained by the much more satisfactory method of incision, if a diagnosis cannot be made without an operation of some kind.

DR. J. C. EDGAR made some remarks on

THE MANIKIN IN THE TEACHING OF PRACTICAL OBSTETRICS,

and exhibited a manikin and a number of appliances which are used by himself in teaching his class in obstetrics. The chief points made by the speaker were: (1) that, as a rule, it is a difficult matter to procure sufficient material, in the shape of puerperal women, for the education of the medical student; (2) that even if this were possible, the student could not study the mechanism of labor, and could have no guide in the application of the forceps, or the performance of any other operation in the pelvis; (3) that if students had thorough manikin training, with the fœtal cadaver, they would leave college equal to any emergency that might arise in the puerperal chamber.

DR. FLORIAN KRUG described the operation of

TRANS-PERITONEAL HYSTERORRHAPHY,

a new method of ventro-fixation of the uterus without opening the abdominal cavity. The method is only applicable to the cases of obstinate, movable retro displacements which have resisted every other form of treatment. The patient is placed in Trendelenburg's position, having been previously prepared for the operation with the same care as for abdominal section. A sound is introduced into the uterine cavity, while a tenaculum holds the anterior lip of the cervix, and a catheter is placed in the bladder. The assistant who is

trusted with these instruments now brings the uterus forward against the abdominal wall, no force being used. After selecting a suitable place to "ventro-fixate" the uterus, a very small incision is made in the linea alba. When the peritoneum is exposed, the finger is introduced into the wound and comes at once upon the fundus of the uterus. The assistant now indicates the position of the bladder and uterus by alternately moving the catheter and sound, and a needle, especially made for the purpose, is passed through the abdominal walls. After the needle has entered the abdominal cavity, it can easily be felt between the uterus and the peritoneum. The cutting edge on the back of the needle is now used to denude about one square inch on the anterior surface of the uterus, and the needle is then passed through the body of the uterus, and brought out at a place corresponding with the point of entrance. It is then threaded with a strand of silkworm-gut and withdrawn, bringing the end of the suture with it. The two strands are now tied, and are generally sufficient to close up the entire wound. As a rule, the operation does not require more than from five to eight minutes. The patient is kept in bed for from ten to fourteen days. The ligatures are allowed to remain for between four and six weeks, when on removal the uterus is found firmly adherent to the anterior wall in a normally anteflexed position. The operator's experience with this method is limited to six cases, all of which have done well, and the results so far are good.

CORRESPONDENCE.

BERLIN.

Observations on the Use of Koch's Lymph in the Berlin Hospitals.

SIR: The following are some points in reference to the use of Koch's fluid for the treatment of tuberculosis that I have gathered at the bedside in Berlin hospitals:

The remedy is dangerous, and must be exhibited with exceeding care in every case. It seems powerful for good; it is as potent for evil. The initial dose should usually range from one-half to one milligramme. Lupus-cases bear larger doses.

The repetition of the dose should depend not only upon the amount of reaction, but also upon the general condition of the vital powers during the next twenty-four hours. If there is extensive tubercular laryngitis be ready for a laryngotomy or tracheotomy. In such a case it is a small dose in mind and your instruments in sight. If there is diarrhœa, or if there is any disturbance of the general system, trivial, perhaps, at other time, be still more careful. After two or three days repeat the dose; if there is no reaction increase by one milligramme every second or third day, or even at longer intervals, as the case may require; and so on, being, of course, guided by the revelations of the microscope. Daily examination of the sputum is a *sine qua non* as a guide.

The cases should be selected and under control either in an institution or, in private practice, with a trained nurse at hand. The pulse, respiration, and temperature should be taken frequently and recorded, and the cases seen by the physician at least twice a day. Confinement to the bed does not seem necessary, but quiet should certainly be enjoined in the earlier period of treatment. The usual supporting diet should be continued, and the functions of the heart and kidneys looked after as well as the lungs. It is said that heart-failure has occurred after the administration of the remedy, that the lungs have become œdematous, and the urine bloody in some cases. Several laryngotomies have been done here recently and have successfully bridged over that dangerous period of reaction during which the tuberculous tissue is attacked and becomes swollen, preliminary to being thrown off. Cases with extensive destruction of lung tissue and much prostrated, with our present knowledge of the remedy, are better without this treatment, though much must depend upon the wisdom and discrimination of the physician in gauging the vital resistance.

The reaction, which includes all the phenomena of the twenty-four hours following the elevation in temperature, begins from four to six or even twelve hours after the injection. It does not always occur even when bacilli have been found, and again it does occur and sometimes violently in suspected cases in which no bacilli have been discovered; but time and further investigation must clear up many things that now obscure the beginning. What has already been discovered is wonderful enough. To see a bedridden lupus patient after a few short weeks of treatment walk is astonishing.

The fever ranges from one to five degrees above the normal, and lasts several hours, just as occurs in the usual daily exacerbation in tuberculosis, accentuated perhaps. Query: Is it wise to disturb a dormant tuberculosis by treatment? At present I would say "Let well enough alone." If at any time bacilli show themselves, and there is fever, treatment would appear to be proper. But as all the early symptoms are apt to be uglier in the beginning, cases that appear to have been made worse may after a time be greatly improved by carefully pursuing the treatment.

It would seem quite possible—even probable, that cavities are formed by the diseased tissue being thrown off through the action of the lymph, and that a good cicatrix under ordinary circumstances would result.

"Lymphomania" rages in Berlin; it affects many of the laity and nearly all the medical men, only Drs. Koch and Libbertz enjoying an immunity, so far as can be learned. What is the lymph? It has been suggested that it is a substance resulting from the destruction of the bacillus tuberculosis, held in glycerin and colored by cyanide of gold. It is stated that the German Government will soon control the fluid, or the distribution thereof.

The following seems to be a good method of preparing it for use, especially where a number of patients are undergoing treatment at the same time: Procure a Pravaz hypodermic syringe, which should hold just one cubic centimetre, also two 10-cubic centimetre graduates. Place one cubic centimetre of the lymph (22 drops) in one of the graduates, and add sterilized or carbolized water (½ per cent. solution) to ten cubic centimetres; then of this solution put one cubic centimetre in the other graduate, and add sterilized water or carbolized water to make 10 cubic centimetres. We now have a one-per-cent. solution. One-tenth of the Pravaz syringeful of this solution (the piston is divided into tenths) represents just one milligramme of the original

fluid—the usual dose. The diluted solutions should be boiled each day, *i. e.*, just brought to the boiling-point. This seems a very simple matter, but much confusion and danger arise from careless manipulation. In every minim of the lymph there are about sixty-four doses.

Dr. Koch surely deserves all the honors that are heaped upon him. The remedy stands preëminently as one of the greatest discoveries of the age. Verily, "we of the present stand as heirs of all ages in the foremost files of time."

BERLIN, December 14, 1890.

CRANIECTOMY FOR MICROCEPHALUS.

To the Editor of THE MEDICAL NEWS,

SIR: In the issue of your journal of November 29, 1890, Professor W. W. Keen reported a case of craniectomy for microcephalus, the third on record, and mentions in detail the two operations done by Lannelongue, of Paris, on May 9th and June 20th of this year.[1]

Dr. Keen naturally supposes his the first operation of the kind done in America, no other being reported; but I desire now to put on record the following case upon which I operated on November 8, 1890, some days before Dr. Keen.

The history of my case is as follows: Albert Ginter, white, aged three years, one of twins, born at term (the other child being stillborn), the youngest child of healthy parents. He has two brothers and two sisters, all well and strong, and without hereditary tendency to insanity or other troubles. The child has never walked nor even attempted to crawl, and cannot raise the body from a horizontal to a sitting position nor remain sitting without support. He has an ugly temper, crying incessantly without apparent cause and tossing his head from side to side, with the arms and legs in constant motion. The child never sleeps for a longer period than two hours. He cannot speak, but recognizes familiar faces, being afraid of strangers. There are constant salivation and an abnormal appetite, the child eating almost anything given it. There is no muscular paralysis, although the head is carried somewhat toward the right side and the right extremities are used in preference to the left. Weight, 28 pounds; height, 33 inches. His general health is good, he is well-nourished, and has had no serious illness. Hearing good. As to his vision, my friend, Dr. Hiram Woods, reports: "I find the following condition of things: Normal external appearances, pupils of medium size, readily responding to daylight and to reflected gas-light. The media of the eyes are perfectly clear, the fundus normal, the optic papilla showing a physiological central excavation. Each eye is hypermetropic in shape."

Head measurements: from occipital protuberance to glabella, 8½ inches; from one external meatus to the other, 9 inches; circumference of the head, 18 inches.

I carefully considered the case, and secured the consent of the parents to operate, having offered them the possibility of some improvement. On November 8, 1890, an incision three inches in length was made through the scalp parallel to, and one-fourth of an inch from, the sagittal suture, beginning at the occipital bone.

To expose the skull better, a transverse incision was then made, and the flaps pinned back. The skull being symmetrical, I chose the right side of the middle line for operation, because the muscles of the left side of the body were less used. The first button of bone was removed from a point one-half inch to the right of the sagittal suture and one-fourth inch anterior to the occipital bone. A second button of bone was removed two inches from the first, and at the same distance from the sagittal suture. The intervening bone was removed by rongeur forceps. The opening in the skull when finished measured two and one-half inches long by one inch wide. The dura was normal. Bleeding was arrested, and the flaps were brought in apposition by interrupted silk sutures. The head was dressed and child put to bed. On the fifth day the dressing was removed and the stitches were taken out. The wound had healed by first intention. The child had at no time a rise in temperature.

On December 6th the child presented the following condition: Temper better, sleeps well, and cries less. Takes interest in things around him. When laid upon his back will raise his body on his elbows. Tries to pull up with his hands. Sits in a baby's chair at the table, which he never did before. Has learned to say "papa." When told to play "peep-a-boo," carries his hand to his eyes. When asked for any member of the family, looks around the room until he sees them.

There is evidently some improvement in his mental condition. Time only can determine the extent. Perhaps a future operation on the other side of the skull may be done if it is considered necessary.

I. R. TRIMBLE, M.D.

214 W. FRANKLIN ST., BALTIMORE, MD.

[1] L'Union Médicale, July 8, 1890.

SULPHATE OF MAGNESIUM IN THE TREATMENT OF PERITONITIS.

A Bit of Ancient History.

To the Editor of THE MEDICAL NEWS,

SIR: Within the past ten years quite a change has taken place in the treatment of peritonitis, especially with reference to peritonitis arising from surgical operations within the abdominal cavity.

Previous to this present decade opium, blisters and leeches were the mainstays in the treatment of peritonitis, regardless of its cause. But when antiseptic surgery made it justifiable to open the abdominal cavity, and therein determine the origin of diseases that had previously been obscure, a new light was shed upon the whole subject, and from it a new version of many of the affections of this portion of the body has arisen to take the place of much that was unsatisfactory and obscure in former times.

One of the salient features of this new version is the use of sulphate of magnesium in the treatment of peritonitis that may be present either before or after the opening of the abdominal cavity. The impression among most medical men is that Tait originated this method of treatment, and that to him and to his followers who had the pluck to deviate from the beaten track of "splinting the bowels" with opium, belongs the credit of this improved method of treatment. That the method is a decided improvement upon the opium plan in cases

of traumatic peritonitis, whether of external or internal origin, no one who has ever tried it will doubt, and to Tait and his followers much credit is due for their persistent and frequently vehement advocacy of it. But the point is that the method did not originate with them. It was used in the beginning of this century by John Abernethy in exactly such cases as are now deemed best fitted for it, and is probably of much older usage, for it is mentioned by Abernethy as if it were a customary procedure. In *Surgical Observations*, by John Abernethy, 5th edition, London, 1820, p. 5, is cited a case of adherent omental hernia that was operated upon. "The operation was followed by general disorder of the system, manifested by a full, strong pulse, furred tongue, great anxiety, restlessness. . . . The stomach was particularly affected, being distended, uneasy on compression. . . . In the course of the day he took an ounce of the salts (Epsom)." Calomel, senna, colocynth, and aloes were afterward administered before satisfactory evacuations of the bowels took place. In commenting upon this and similar cases, Abernethy claims that disorder of the chylopoietic organs was the cause of the trouble. He says, also: "With respect to the treatment of cases of this description it may be right to add, that the primary object should be to produce secretions from the irritable organs. In many instances *opium* will not prevent continual efforts to vomit, yet when by *sulphate of magnesium* or purgatives administered in the form of pill, and clysters, stools are procured, the vomiting ceases, the stomach retains both food and medicine, and general tranquillity of constitution is as suddenly restored."

When we consider the state of medical knowledge as it was in the beginning of this century, this case becomes a remarkable bit of clinical record, showing the skill of a wise physician and surgeon, who pursued right methods without the guidance of physiology and pathology as we have them to-day. It must be remembered that peritonitis as a distinctive disease was then hardly known, Bichat having recognized and proved it as such but a few years before.

John Abernethy was a remarkable man, and was in several ways one of the many who helped make the present medical and surgical advance possible.

CHARLES M. SELTZER, M.D.
608 N. SEVENTEENTH ST., PHILADELPHIA.

"AN EFFICIENT METHOD OF REMOVING FOREIGN BODIES FROM THE NOSE."

To the Editor of THE MEDICAL NEWS,

SIR: While reading the issue of your journal of December 6th, I came across an item which peculiarly interested me; it is headed "An Efficient Method of Removing Foreign Bodies from the Nose," and is credited to an article by Dr. S. J. Taylor, in the *London Lancet* of November 8th. Dr. Taylor says he got his idea from a communication in the *Lancet* of November 3, 1888, the name of the author of which he could not recall. That communication was my own. I sent it to the *Lancet* while living in Würzburg, Germany.

The idea of the principle occurred to me several years ago and I have had repeated occasions to test its efficacy, so I know the method is an excellent one, being both safe and simple. In Vienna I told one or two of the well-known specialists there of the method and they assured me it was entirely new and original. For natural reasons, therefore, I feel desirous of preserving my claim to its authorship. Very truly yours,

CHARLES W. DODD, M.D.
84 W. EIGHTH ST., CINCINNATI, O., Dec 15, 1890

NEWS ITEMS.

Koch's Lymph in Canada.—A small supply of Koch's lymph having been obtained by Professor Roddick, six patients, with presumably extra-pulmonary tuberculosis, are under treatment in the Montreal General Hospital. The first injection was made on December 19th. So far the usual rise of temperature has been observed, and an increase of albumin in a case of kidney disease. In the case of a girl of fifteen years old, with lupus of the face, local changes are manifest after five injections. Full notes of the cases are taken by Dr. James Bell and the hospital staff.

The Reduced Subscription Price of the "Medical News."—The publishers of THE MEDICAL NEWS desire particularly to call the attention of subscribers to the fact that their remittance should be for ***$4.00*** and not for ***$5.00***, and thereby avoid the trouble attending the return of the extra dollar.

A Lifetime Subscriber.—Very rarely is it possible to record the unswerving fidelity of a lifetime between reader and magazine as is shown between Dr. John D. Ross, of Williamsburg, Pa., and the *American Journal of the Medical Sciences* and THE MEDICAL NEWS. In renewing his subscription, Dr. Ross writes that though a continuous subscriber since 1835, he has never missed a number, and gracefully adds a tribute to the punctuality evinced by both the publishers and the post-office.

In Memory of Richard J Levis.—At a meeting of the Faculty of the Philadelphia Polyclinic and College for Graduates in Medicine the following preamble and resolutions were unanimously adopted:

WHEREAS, The Divine Ruler of the universe has seen fit to remove from among us Dr. Richard J. Levis, our friend and colleague; therefore, be it

Resolved, That in the Emeritus Professor of Surgery of the Philadelphia Polyclinic, not only we but the whole medical profession have lost an honored and faithful co-laborer; and the community have cause to mourn a skilful and learned physician, an honest and sympathizing friend.

Resolved, That by his kindness of manner, by the thoughtful interest which he always manifested in the younger members of the profession, by his encouragement, his earnestness, and his example, he endeared himself to all, and that we fitly honor and cherish his memory. We must emulate his zeal, and vie with each other in carrying forward the great work in which he was so ardently engaged.

Resolved, That we tender to his family in this sad hour of affliction our heartfelt sympathy.

Resolved, That these resolutions be handed to the family of our beloved colleague and to the medical journals. THOMAS J. MAYS, M.D., *President*,
S. SOLIS COHEN, M.D., *Secretary*.

Succi the Faster.—For the last forty-five days an Italian by the name of Succi has been fasting in New York in an exhibition hall. During that time he has lost over forty pounds. The newspaper reports state that his physical condition is very good and his mental condition bright and clear. For the purpose of avoiding the pangs of hunger he daily took an elixir made up chiefly of chloroform and cannabis indica, and his physical condition is very much better than was that of Dr. Tanner. He used during his fast large quantities of water and smoked cigars and cigarettes freely.

The Necessity of Quarantine Against Cholera.—Dr. J. H. Rauch, Secretary of the Illinois State Board of Health, predicts that unless proper quarantine regulations are adopted there will be a serious cholera epidemic in this country next spring. He points out that 10,000 people have fallen victims to cholera in Abyssinia within the last six months; that Spain is infected; that cholera is epidemic in India, and that 80,000 people have perished from the disease in Japan and Corea and the adjacent Asiatic provinces of Russia within a short time. He emphasizes the necessity of protection against the scourge on the Pacific coast.

"Cholera," he says, "has thrice followed the same route from Bekor to Alexandrietta and through the Levant before the Suez canal was constructed. This time the epidemic is being aided by the improved methods of transportation and that monument of pestilence, the yearly pilgrimage of Moslems to Mecca. Thousands upon thousands of these filthy, ignorant Mussulmans congregate at Mecca and spread death and disease. They carry infection into Syria, Turkey, Southeastern Austria and the provinces of Northern Africa. Cholera is there now and its spread will soon be augmented by the Mecca crowd."

Edinburgh Medical Missionary Society.—The November number of the *Journal of the Edinburgh Medical Society* celebrates the fiftieth anniversary of its existence. When the Society was formed the idea of associating medicine with missionary effort "was sneered at by many and scouted by all but a few," whereas now no mission is considered properly equipped, or on an efficient working basis, if it has no medical members. About one hundred and forty such physicians, with British diplomas, are to-day in foreign lands, and, including those from the United States and Canada, there cannot be fewer than three hundred medical workers in heathen and Mohammedan countries, of whom probably fifty are women. Women are especially welcome in the neglected zenanas of India and other parts of the Orient.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM DECEMBER 9 TO DECEMBER 29, 1890.

By direction of the Secretary of War, MARCUS E. TAYLOR, *Captain and Assistant Surgeon*, is relieved from further duty at Boise Barracks, Idaho, and will proceed, at the expiration of his present sick-leave of absence, to Vancouver Barracks, Washington, and report in person to the commanding officer of that post for duty, reporting also by letter to the commanding general Department of the Columbia.—Par. 17, *S. O. 287, A. G. O., Washington*, December 9, 1890.

By direction of the Secretary of War, CHARLES M. GANDY, *Captain and Assistant Surgeon*, now on leave of absence, will report in person, without delay, to Colonel Eugene A. Carr, Sixth Cavalry, at Rapid City, South Dakota, for duty with troops in the field, reporting also by letter to the commanding general Department of Dakota.—Par. 14, *S. O. 287, A. G. O., Washington*, December 9, 1890.

RAYMOND, THOMAS U., *First Lieutenant and Assistant Surgeon.*—Having been ordered to temporary duty at Vancouver Barracks, Washington, by the commanding general Department of the Columbia, is assigned to duty at that post, and relieved from further duty at Fort Sherman, Idaho.—*S. O. 294, A. G. O., Washington, D. C.*, December 17, 1890.

Par. 17, of Special Orders No. 287, December 9, from this office, relating to MARCUS E. TAYLOR, *Captain and Assistant Surgeon*, is so amended as to direct him to report to the commanding officer Vancouver Barracks, Washington, for duty as Post Surgeon, relieving Bernard D. Irwin, Colonel and Surgeon, of that duty. Rudolph G. Ebert, Captain and Assistant Surgeon, will be relieved from duty at Vancouver Barracks, Washington, upon the arrival of Captain Taylor, and will then proceed to Fort Huachuca, Arizona Territory, and report in person to the commanding officer of that post for duty.—*S. O. 294, A. G. O., Washington, D. C.*, December 17, 1890.

By direction of the Secretary of War, the extension of leave of absence granted STEVENS G. COWDREY, *Major and Surgeon*, in Special Orders, No. 263, November 10, 1890, from this office, is further extended ten days, on account of sickness.—Par. 4, *S. O. 293, A. G. O.*, December 16, 1890.

By direction of the Secretary of War, FRANCIS J. IVES, *Captain and Assistant Surgeon*, now on leave of absence, will proceed to Rapid City, South Dakota, and report in person to Colonel Eugene A. Carr, Sixth Cavalry, for duty with troops in the field, relieving William B. Banister, First Lieutenant and Assistant Surgeon, and reporting also by letter to the commanding general Department of Dakota.—Par. 18, *S. O. 289, A. G. O., Washington, D. C.*, December 11, 1890.

STEPHENSON, WILLIAM, *Captain and Assistant Surgeon.*—Is granted leave of absence for fourteen days, to take effect on or about December 20, 1890.—Par. 18, *S. O. 291, A. G. O., Washington, D. C.*, December 13, 1890.

By direction of the Secretary of War, WALTER REED, *Captain and Assistant Surgeon*, now on duty at Baltimore, Md., will report in person, without delay, to the commanding officer Fort Keogh, Montana, for temporary duty at that station, and by letter to the commanding general Department of Dakota.—*S. O. 291, Headquarters of the Army, A. G. O., Washington*, December 13, 1890.

By direction of the Secretary of War, WILLIAM O. OWEN, JR., *Captain and Assistant Surgeon*, now on leave of absence, will report in person, without delay, to Colonel Eugene A. Carr, Sixth Cavalry, at Rapid City, South Dakota, for duty with troops in the field, and by letter to the commanding general Department of Dakota.—Par. 17, *S. O. 291, A. G. O., Washington, D. C.*, December 13, 1890.

By direction of the Secretary of War, CHARLES SMART, *Major and Surgeon*, is detailed as a delegate to represent the Medical Department of the Army at the annual meeting of the American Public Health Association, to be held at Charleston, S. C., December 16 to 19, 1890. He will proceed to Charleston, accordingly, and, upon the final adjournment of the Association, return to his station in this city.—Par. 2, *S. O. 290, A. G. O., Washington, D. C.*, December 12, 1890.

By direction of the Secretary of War, ROBERT J. GIBSON, *Captain and Assistant Surgeon*, now on leave of absence, will report in person, without delay, to the commanding officer Fort Meade, South Dakota, for duty with the Seventeenth Infantry in the field, reporting by letter to the commanding general Department of Dakota.—Par. 6, *S. O. 297, A. G. O., Washington, D. C.*, December 20, 1890.

By direction of the Secretary of War, the leave of absence granted FREEMAN V. WALKER, *First Lieutenant and Assistant Surgeon*, in S. O. 85, Department of the Platte, November 11, 1890, is extended one month.—Par. 9, *S. O. 298, A. G. O.*, December 22, 1890.

By direction of the Secretary of War, leave of absence for six months, on surgeon's certificate of disability, with permission to leave the Department of Texas, is granted JOHN J. COCHRAN, *Captain and Assistant Surgeon.*—Par. 2, *S. O. 298, A. G. O.*, December 22, 1890.

By direction of the Secretary of War, WILLIAM J. WAKEMAN, *Captain and Assistant Surgeon*, is relieved from further operation of Par. 13, S. O. 254, A. G. O., October 30, 1890, and telegraphic instructions of the 16th instant, from this office, transferring him from Fort Bidwell, California, to Fort Huachuca, Arizona Territory, and he will return from Reno, Nevada, to Fort Bidwell, for further duty at the latter post.—Par. 3, *S. O. 300, A. G. O.*, December 24, 1890.

THE MEDICAL NEWS.

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VOL. LVIII. SATURDAY, JANUARY 10, 1891. NO. 2.

ORIGINAL LECTURES.

DIGESTION, ASSIMILATION, AND OXIDATION; THEIR NORMAL AND ABNORMAL CONDITIONS IN RELATION TO HEALTH AND DISEASE.

A Series of Clinical Lectures delivered at the New York Post-Graduate Medical School and Hospital.

BY WILLIAM HENRY PORTER, M.D.,
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LECTURE I.

GENTLEMEN: To-day we shall commence to study together the most interesting and common class of maladies which are presented to the practitioner, namely, those commonly known as "Dyspepsias," or functional derangements of the digestive, absorbing, hepatic, and assimilating tract.

First, however, I wish to present to you an illustrative case, brought to my clinic by Dr. N., of Ellensville, N. Y., for examination and advice as to treatment. The patient, Mr. J., aged fifty-seven years, a carpenter by occupation, tells us that until five years ago he considered himself a perfectly sound and healthy man. From that time he has complained of a sense of soreness in the epigastric region. His appetite has been poor, and he has lived upon a light vegetable diet. Food for some time after being taken causes no distress or pain, but in from one to two hours, or more, distress commences, his abdomen becomes tympanitic, often with considerable borborygmi and general discomfort. This discomfort lasts for a varying length of time, until a reverse peristalsis is developed and the gas which has accumulated in the ascending and transverse colon is forced back into the small intestine, and finally to the stomach, and is then belched up. There is then relief until a few hours after the next meal, when the same phenomena are repeated.

The pain and distress led to the supposition that the stomach was primarily at fault, but the symptoms are not due to a gastric condition, but rather to the over-distended colon, which is wedged in under or posterior to the stomach and presses back upon the solar plexus, thus causing intense pain in the epigastric region. As a general rule, when the primary difficulty is located in the stomach, the pain and distress in the epigastric region come on during or immediately after the ingestion of the meal, and are immediately followed by the eructation of gas and the belching up of an acid, watery fluid, or even by nausea and vomiting.

When the difficulty is in the intestines and liver there is no pain or discomfort immediately after eating, but in an hour or more the distress commences and lasts for a number of hours. Pain now in the epigastric region becomes a prominent symptom, so, also, the tympanites, borborygmus, and general distress until after a considerable time, when the gas escapes by either the mouth or the anus, and relief is obtained.

This patient complains also of pronounced constipation, which shows that there is a deficiency in both the quantity and quality of bile which is discharged into the intestine. When the bile is defective in quality but abundant in quantity, it acts as an undue irritant and tends to produce looseness of the bowels, with frequent tarry and painful stools.

By observing these clinical facts we can differentiate between the two conditions of functional derangement in the bile-producing power, namely, those of over-production and under-production—the quality, however, being impaired in both instances.

This patient also suffers from headache, insomnia, vertigo, and general nervous irritability—a well-marked train of symptoms often classed under the vague term "neurasthenia." These symptoms have continued for five years, until now he is considerably emaciated, frequently suffers from night-sweats, and is physically and mentally weak. The tongue, as you can readily see, is heavily coated, pale, soft, and flabby, and its margins are indented by the teeth. These conditions tell us at once that we have imperfect assimilation and impaired nutrition.

The skin has a dirty, muddy appearance, and looks as if it were thickened, and there is discoloration of the conjunctivæ, indications of hepatic derangement.

In such cases the urine is usually scanty, high-colored, superacid, and of high specific gravity, and, as a rule, does not contain albumin, glucose, or casts. If, however, the condition is very prolonged, it may result in the production of albumin and casts, or glucose, or combinations of these. But more frequently we find an abundance of urates, uric acid, or oxalates, usually the former. In many instances the urine is so intensely acid that it remains perfectly clear and free from deposit for days or weeks after it has been discharged. The rule is, that when digestion and assimilation are properly effected, the urine is but faintly acid, and will change to an alkaline reaction within forty-eight or seventy-two hours at the longest.

By observing these clinical phenomena, and by a study of the urine, both as to its chemical composition and microscopic sediments, and the time at which they are formed, we can learn with certainty where the difficulty is located, and also the condition of the digestive and assimilating functions, and the manner in which the liver is doing its work.

One of my theories in relation to nutrition and disease is, that many of the chronic maladies which we meet with late in life have had their origin, not in inherited taints, but rather in false methods of feeding from infancy up to manhood. If we observe Nature

closely, we notice in almost all classes of animals, the herbivora not excluded, that the primary food-stuff is composed very largely of the nitrogenous, or CHNOS, compounds in contra-distinction to the starches, sugars, and fats, or the CHO class. Organic chemistry teaches us that the animal economy cannot take a CHO compound and join free nitrogen to it and form a proteid substance. Consequently, so far as nourishing or building up any of the component parts of the body is concerned, starch, sugar, and fat furnish no nutriment to the system, and in this sense I shall continue to speak of the CHO compounds as being absolutely non-nutritious, and only of service to the body in so far as they yield heat, energy, lubrication, and rotundity of form. That they are more easily oxidized than the nitrogenous compounds I think no one can deny, and in being more easily oxidized they exhaust the oxygenating capacity of the blood and leave it deficient in a supply of oxygen for the complete oxidation of the nitrogenous compounds. These being incompletely oxidized, true nutrition is impaired and the foundation is laid for an innumerable host of ills.

As I have already asserted, these maladies are directly traceable back to infancy. Nature intended that the infant and growing child should be largely supplied with a nitrogenous pabulum, and with just enough sugar and fat to keep it warm, and to supply lubrication, and a moderate amount of rotundity. So soon as the infant can be removed from the breast or bottle, the invariable tendency on the part of the laity is to take the child away from a strongly nitrogenous diet and substitute a food composed largely of the CHO compounds. The reason for this is that "somebody" has said "that this class of food-stuffs is the best." They, at least, know that it tends to make fat babies that will roll one way as well as the other!

The result of this process of false feeding is that vitality is sapped in infancy, and when the individual is attacked by acute disease he rapidly succumbs to its influence. A false appetite is also established for the CHO compounds—an appetite for a stimulating rather than a nutritive class of food-stuffs. The child soon prefers starch, sugar, and fatty foods to the plain nutritive nitrogenous compounds. Soon the demand on the part of the system for this class of CHO stimulants is not fully met by the starch, sugar, and fat, until, finally, the more active C_2H_6O stimulant—alcohol—is called upon to satisfy the demand. This continues until well-defined habits of intemperance are developed, as is most perfectly illustrated in the Scotch and Irish races, fed, as they are, on the oat and potato until the stronger whiskies alone can satisfy the demands of nature.

Next, we come to the period of puberty, when the generative system is to become more fully developed. These changes call for an increased nutritive supply, but owing to the falsely-acquired appetite and somewhat deteriorated vitality, nature is not equal to the demand, the general systemic vitality fails, or the reproductive organs are incompletely developed. A not uncommon practice is the attempt to assist nature by stimulating with wines or other forms of alcohol, which, although they temporarily improve the condition, still further deplete the nutritive vitality and lay the foundation for diseases of the reproductive organs, nervous system, etc. In consequence of this condition, the reproductive functions, physiologically speaking, remain at a low ebb, if they are not altogether lost.

As the child approaches adult age, when the greatest physical and mental capacity should be present, we find that this false appetite and false method of feeding have become deteriorating factors, and when the attempt is made suddenly to accomplish great physical and mental work there is noticeable a great and rapid expenditure of the vital forces, and the system is left in such a lowered condition that it is literally a good pabulum for disease-germs and poisons of all kinds.

It is by this process of false feeding and devitalization, according to my belief, that the foundation is laid for most of the tuberculosis which appears at this period of life. The proper soil is present upon which the tubercle bacillus can thrive and multiply and stimulate a growth of tubercle tissue. For this reason it seems difficult to comprehend how any treatment which can be brought to bear upon the system shall at once, or in a moderately short time, renourish and revitalize the system so that it can resist the inroads of germs or other forms of organic poisons.

If Koch's lymph will at once revitalize or renourish the individual and at once change habits of years' duration, then, and only then, can it unquestionably stamp out tuberculosis! But, as yet, I am not aware of Koch having made any such assertion.

With these few preliminary remarks, let me say that a thorough understanding of the nutritive functions of the body is of the utmost importance, if we wish to attain anything like success, or the ability to cope with the inroads of either acute or chronic diseases.

First, I propose to study with you the fluids that act upon the materials or food-stuffs which are taken into the system for the growth, maintenance, and activity of the animal economy, and for convenience I have tabulated them in the manner shown on page 31.

The composition of the saliva is rather simple as compared with that of many of the other digestive fluids, and contains only one organic ferment, known as ptyalin. Chemically speaking, the saliva is, however, a more or less complex substance, having an alkaline reaction, a specific gravity of 1005, and containing, besides ptyalin, water, and numerous salts, a trace of derived albumin, mucosine, etc.

The functions of the saliva may be stated as mechanical and chemico-physiological. Under the former heading it may be said to lubricate the mouth and assist in mastication of the food. It also acts as a lubricant to the passage of the bolus through the fauces, pharynx, and œsophagus, and on into the stomach. Having reached the stomach, it is, by its alkalinity, an important factor in exciting gastric secretion. This action is produced according to the common law, that alkalies brought in contact with acid-secreting membranes tend to stimulate the flow of acid secretions, while acids brought in contact with acid-secreting membranes tend to decrease the flow of the acid secretion. The reverse of this law is true for the alkaline-secreting membranes. If we wish to develop and retain the most perfect digestion, the food-stuffs should be thoroughly masticated in as dry a state as is compatible with comfort; for by so doing the largest possible amount of alkaline saliva is

excreted, which, as we have already seen, is an important factor in exciting the gastric flow. We must abandon the American fashion of bolting the food and washing it down in solid lumps with some fluid, such as milk, tea, coffee, or alcoholic stimulants. Many of our digestive difficulties commence in this way, by depriving nature of one of her stimuli. This leads also to similar difficulties lower down in the alimentary canal.

Fluid or tissue.	Ferment.	Action.
Saliva.	Ptyalin.	Converts starch into maltose.
Gastric juice.	Pepsin.	Converts proteids into peptones.
	Milk-curdling.	Curdles caseine of milk.
	Lactic acid.	Splits milk sugar into lactic acid.
	Fat-splitting.	Splits fats into glycerin and fatty acid.
Secretion of Brunner's glands.	.....	Liquefies proteids at 98.5° F.
		Converts maltose into glucose.
Pancreatic juice.	Amylopsin.	Converts starch into maltose.
	Trypsin.	Converts proteids into peptones.
	Steapsin.	Splits fat into glycerin and fatty acid.
	Milk-curdling.	Curdles caseine of milk.
	Emulsive.(?)	Emulsifies fat.
Intestinal juice.	Diastatic.	Converts maltose into glucose.
	Proteolytic.	Changes fibrin into peptone.(?)
	Invertin.	Changes cane sugar into glucose.
	Milk-curdl'g(?)	Curdles caseine of milk.(?)
Bile and bile acids.	.....	Emulsifies neutral fats.
		Converts starch into sugar.
		Converts glycogen into sugar.
		Excites contractions of muscular coat.
		Stimulates muscles of the villi.
		Excites vital activity of intestinal epithelium.
		Moistens intestinal wall.
		Lubricates the colon.
		Prevents decomposition; is antiseptic.
Hepatic function.	Glycogenic.	Changes glucose into glycogen.
	Bile-secreting.	For use in digestion.
	Bile-excreting.	To eliminate poisons and drugs.
	Peptone-destroying.	Converts peptones into serum-albumin, and globules.
	Ptomaïne-destroying.	Converts poisonous ptomaïnes into inert ptomaïnes.
	Germ-destroying.	
Blood.	Diastatic fibrin forming.	
	Fibrin-forming ferments.	
Chyle. Liver.(?) Milk. Most tissue.	Diastatic ferments.	
Muscle.	Peptone-forming ferments.	

The chemico-physiological activity of the saliva is located in the ptyalin, which is an organic nitrogenous ferment, having for its function the hydration of starch, or the conversion of starch into maltose, conveying it, as it were, one step forward in the chemico physiological process. This action is effected in only an alkaline solution, or in an acid medium the percentage acidity of which has not exceeded ten per cent. In this respect it is essential that a large quantity of the alkaline saliva should be carried into the stomach, for it not only helps to excite the flow of gastric juice, but it also keeps down the acidity of the fluids contained in the stomach, thus giving the ptyalin a longer time in which to act upon the starches, and so decreases the amount of work that otherwise must be accomplished in the intestines or left undone.

My advice to patients is never to drink liquids of any kind while eating, but to take the food as dry as possible. This, of necessity, requires more prolonged mastication to excite sufficient saliva for the easy passage of the bolus to the stomach. By following this rule the largest possible amount of alkaline saliva is carried into stomach with each meal. With this method of eating, the food in the stomach is necessarily in too solid a state for the most perfect gastric digestion, and to obviate this difficulty completely fluids should be freely taken before or after the meal. This causes the particles of food in the stomach to be widely separated, and thus to present the largest possible surface to be attacked by the gastric digestive fluids, and at the same time the sum total of its alkalinity has not been reduced. The best fluid to be taken after a meal is coffee, made not very strong, and drunk without milk or sugar. The active principle of the coffee—caffeine, $C_8H_{12}N_4O_3$—is a safe stimulant to use, being a nitrogenous substance that can be utilized as a food, which is not the case with the purely CHO compounds.

Having reached the stomach under the most favorable circumstances, we find, by reference to our table, four ferments besides the hydrochloric acid to act upon the food-stuffs before they are passed on to the intestines. These are the milk-curdling, peptic, lactic-acid forming, and the fat-splitting ferments. The presence of the first and second is unquestioned and of the most importance. The third is quite generally accepted, while the fourth is somewhat in doubt.

For convenience of study our food-stuffs may be separated into two common classes: first, the nutritious, albuminous, nitrogenous, or CHNOS compounds, and, second, the non-nutritious starches, sugars, and fats, or the CHO compounds.

As milk is largely used, both as an ordinary article of diet and as a special diet for the sick, I will refer, first, to changes produced in it before its nitrogenous compound, the caseine, is ready to be attacked by the true digestive processes. The milk, as ordinarily taken, is in a fluid state. Its caseine must be precipitated before the hydrochloric acid and pepsin can act upon it. In the secretions of the stomach there are two substances capable of precipitating caseine—hydrochloric acid and a special organic ferment known as the milk curdling ferment. If the caseine is precipitated by the hydrochloric acid of the stomach, it will be solidified in hard, tough, and leathery lumps, but when precipitated by the milk-curdling ferment it is thrown down in fine, feathery flakes, presenting a large surface and easily permeated and digested by the pepsin.

It is a well-known fact that when the milk or any food-stuff is taken into the stomach cold, it tends to excite a free flow of hydrochloric acid and decreases the

milk-curdling ferment; the reverse takes place when the milk or any food-stuff is taken warm. Milk taken after a hearty meal comes in contact with an abundance of hydrochloric acid, and is apt to solidify in hard, tough lumps, and to impair digestion. Therefore, to have the milk placed under the most favorable circumstances for digestion, it should not be taken cold, or with, or after, a full meal, but should be taken quite warm, or even hot, and alone. The addition of lime-water also favors precipitation in this fine, feathery form. I am, however, in the habit of using small and repeated doses of fel bovis inspissatum, which seems to stimulate a flow of the milk-curdling ferment. By observing these rules and administering the fel bovis, I have yet to see a stomach that cannot easily be made to prepare the milk thoroughly for the action of the hydrochloric acid and pepsin.

The next step in the digestive process in the stomach is the action of the hydrochloric acid. This acid, which is the true acid secretion of the gastric juice, attacks all forms of albuminous or nitrogenous compounds, vegetable as well as animal, and changes them from a native or derived state into a uniform acid-albumin, commonly called syntonin. The reason for this change is the fact that the pepsin can attack an acid-albumin only, and for its perfect action requires an acid medium. The pepsin produces a peculiar and gradual gelatinization, by which the semi-solid syntonin is transformed, first, into a propeptone, then into albumoses, and, finally, into a liquid and easily-diffusible peptone. An important fact to be remembered in connection with the peptonizing process in the stomach is, that the peptic action is a slow and comparatively weak process, and, as a result, only a small portion of the albumin is completely transformed in the stomach into a diffusible peptone. The major part passes untransformed into the intestine, where it is changed into an alkaline albumin, to be attacked by the more vigorous and erosive tryptic ferments of the pancreatic and intestinal secretions, and converted into a peptone.

The starches, sugars, and fats, practically speaking, are unaffected in the stomach, but the nitrogenous envelope surrounding the starch granule or oil globule may be digested away, thus setting free the granulose and oil. This has been called "the starch-hydrating and fat-freeing action of the stomach."

The lactic-acid ferment, under favorable circumstances, is said to attack the saccharine elements, causing fermentation and the production of lactic acid. This fermentative process can occur only when there is a decreased flow or absence of the acid and peptic qualities of the gastric juice. This process of lactic-acid fermentation is now supposed to be the explanation of the presence of lactic acid in the gastric secretion, and of the former belief that it was the normal acid of the gastric juice. This formation of lactic acid is believed by some to be the origin of the superabundance of acid in the stomach in so-called acid dyspepsia, and that overacidity is not due to an abnormally large flow of the normal hydrochloric acid. In a few instances this is unquestionably true, but in by far the largest number of cases there is a hypersecretion or hyperacidity of the gastric juice, which is the true cause of acid dyspepsia. In acid dyspepsia which has resulted from lactic-acid fermentation, the eructation of acid fluid or gas does not come on immediately after taking the food, but is developed some time later, and is intensified by taking saccharine food. When due to hypersecretion of the normal acid the symptoms come on immediately, and in the absence of saccharine foods.

In regard to the fat-splitting ferment but little is known. The theory advanced, however, is that this ferment is generated by the stomach and acts upon a limited amount of fat, splitting it into its component parts—glycerin and fatty acids.

Crediting the stomach with the largest possible amount of work, we find that it has comparatively little to accomplish. It practically has no action upon the starch, sugars, or fats, and transforms only a portion of the nitrogenous elements into a complete peptone. Therefore, I have been led by these physiological studies, and by observation in a large number of clinical and pathological examinations, to believe that there are very few stomachs which are not fully capable of performing the necessary amount of work; that in the majority of instances of so-called dyspeptics the stomach is not at fault, and that one great reason why dyspeptics do not get well, is because treatment is entirely directed toward the stomach and away from the true seat of the malady.

ORIGINAL ARTICLES.

INFLAMMATION IN AND ABOUT THE HEAD OF THE COLON.[1]

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INCIDENT to the remarkable advance in peritoneal surgery during recent times is an entire recasting of the pathology and treatment of deep-seated inflammations of the right iliac fossa. Our increase of knowledge regarding the origin and nature of these conditions has come from the ready access to the peritoneal contents, and particularly from the disclosures of that unequalled diagnostic resource, the exploratory incision.

The teachings in most systematic treatises on surgery and practical medicine upon inflammation and its results in and about the caput coli are not only practically worthless, but positively misleading. This is true not only in regard to pathology and treatment, but even in regard to the anatomy and relations of the cæcum and its appendix. The only literature of practical value upon this subject is scattered through the journals of the past three years, and, with the exception of the able papers of Sands, Hoffman, McBurney, and Weir, consists of a few reported cases. The frequency of the disease, the importance of its early recognition, together with my own recent experiences in its operative

[1] Read before the Southern Surgical and Gynecological Association, November 12, 1890.

treatment, have induced me to present this paper upon the subject.

Scarcely a decade has elapsed since so experienced a surgeon as the late Dr. H. B. Sands, of New York, announced, in a paper on this subject, that in the course of twenty years he had seen twenty-nine cases of appendicitis. During the past year many surgeons have met with a dozen or more cases, and the ability to recognize the disease and the resort to appropriate operative treatment are fast increasing. This great advance in our knowledge and resources is the direct result of the labors of American physicians and surgeons, the most notable contributions being from Sands, Weir, Fitz, Pepper, Morton, Hoffman, McBurney, Dennis, and Stimson.

It is now well known that inflammatory changes of the vermiform appendix are, in almost every case, the origin of the inflammatory diseases about the caput coli. Inflammation of the cæcum is very rare, yet the testimony of surgeons and pathologists is abundant that in a certain proportion of cases cæcitis, with perforation, occurs without involvement of the appendix. Regnier, in 1886, operated by abdominal section on a case presenting symptoms of intestinal obstruction with peritonitis. At the autopsy cæcitis, with perforation, was discovered.[1] Other cases have been reported, and verified by post-mortem examination. In 1888, I operated on a case of perforative cæcitis, and sutured two perforations in the cæcum. The patient recovered, and was present in the Section of Surgery of the American Medical Association in May, 1888. A full report of the operation can be found in the *Journal of the American Medical Association*, July 7, 1888. In this case I carefully examined the appendix, and found that it presented no indications of disease. Compared, however, with appendicitis, cæcitis is a very rare condition. McBurney estimates the relative frequency of cases of cæcitis and appendicitis as one to one hundred. I should place the proportion as much less, and believe it would be nearer the mark to say one to two hundred.

Fæcal impaction has been mentioned by surgical writers as a cause of inflammation about the head of the colon. Pain over the cæcum, with a fæcal mass perceptible on pressure, often occurs, but is rarely, if ever, associated with peritonitis. A few weeks since I saw a case with Dr. H. H. Grant, of Louisville, in which there was localized peritonitis in the right iliac fossa, with a well-defined, firm tumor. Abdominal section was done, and, instead of appendicitis, we found the disease to be cancer of the caput coli. Irrigation and drainage rescued the patient from the immediate danger of active peritonitis. The patient was a woman of middle age, and the engrafted peritonitis presented the symptoms of an acute condition. Malignant disease of the cæcum has not, so far as I am aware, been mentioned by writers upon this subject as a probable condition in the diagnosis of deep-seated inflammations of the right iliac fossa.

Practically speaking, however, localized peritonitis about the head of the colon is, with very rare exceptions, caused by inflammation of the vermiform appendix. Unlimited confusion in the study of this subject has been caused by the use of the terms peri-typhlitis and para-typhlitis, and intra-peritoneal and extra-peritoneal abscess. It has been taught that peri-cæcal inflammation may be of two distinct anatomical characters—that the cellular tissue around the cæcum may be inflamed and abscess result, without involving the peritoneum, and that in such cases the surgical treatment should consist in a dissection by which the peritoneum is pushed to one side and the abscess opened and evacuated. This is altogether misleading. In not a single case in which I have operated or seen others operate, was there a doubt that the pus was within the peritoneal envelope. This is the unqualified testimony of Weir, McBurney, and others, who have studied the subject from the standpoint of practical experience. Weir has shown, in an analysis of one hundred autopsies, that in not a single instance did the abscess originate in the extra-peritoneal tissue, and that in only four was pus found in the tissues. When an operation is done in the early or middle stage of the disease, there will be no doubt upon this point; but late operations, and operations in neglected cases, may show that pus has broken through the lateral or posterior layers of the peritoneum and forced itself along the intra-muscular spaces. Even this condition is very rare, and the greater part of the abscess is really intra-peritoneal. Moreover, Treves has demonstrated, by an elaborate series of dissections, that the cæcum and appendix are wholly within the peritoneal cavity.

When inflammation of the appendix and the attendant peritonitis occur, adhesions glue together the adjacent coils of intestine, and shut off the general peritoneal cavity. The same conservative process occurs in pyosalpinx. In each instance the diseased structures are intra-peritoneal, and in each instance the outlet may follow diverse directions, if left to itself. The operation for either condition is a veritable abdominal section. These anatomical and pathological facts have now been established beyond question, and the time has come to cease talking and writing about the cellular tissue covering the posterior surface of the cæcum, of cellulitis, of extra-peritoneal abscess, of para-typhlitis, and of operations in which uninflamed peritoneum is pushed away from the iliac fossa and

[1] Traitement Chirurgicale de la Peritonite, 1886, p. 57.

the posterior cellular space is opened and evacuated. These things do not exist or occur, and should be dismissed from future discussions of this subject.

Inflammation of the appendix varies in degree, from a simple catarrhal inflammation with infiltration of the submucous tissues, to perforation and complete gangrene of the organ. The course and progress of the inflammation may be acute, subacute, or chronic, giving rise to a clinical history characterized as fulminant, explosive, recurrent, mild, etc. The lesions likewise vary, and there may be found slight obstruction from thickening of the mucosa, stricture of one or more portions of the lumen of the appendix, adhesions to the cæcum and contiguous organs, a distended cyst holding an ounce or more of pus, or perforation and separation from the cæcum by sloughing.

The starting-point of the inflammatory process seems to be in the mucosa, but the exact nature and cause of the process are as yet undetermined. The appendix normally varies in size and conformation, and in many instances lesions have been attributed to congenital defects due to errors of development. It also varies much in length, as well as in its approximation to the external surface of the cæcum. Fæcal concretions and foreign bodies have been regarded as the causes of the inflammations, but the experience of Stimson and some others is opposed to such an explanation of the morbid process. Of twenty-one cases reported by Stimson, in only one was a fæcal concretion or a foreign body of sufficient size to have caused the inflammation found. In all, however, there was marked inflammation of the mucosa, which in some instances had destroyed its structure. Total or partial obliteration of the lumen was found in three cases, and in one the stricture was double. It is my belief that fæcal concretions, catarrhal inflammation, obstruction, and retention are the initial steps in inflammatory lesions of the appendix, to which the peritonitis known as that of contiguity is added.

The appendix is often found buried in and attached to a mass of inflammatory exudate which has become firm bands of false membrane. The signs of previous inflammatory attacks and chronic inflammation corresponding to the evolution of symptoms are often found. Ulceration and perforation, associated with suppurative peritonitis, are common lesions of the appendix. The lesions and their results are very similar to those of purulent salpingitis. The adjacent coils of intestine are agglutinated, shutting off the general abdominal cavity, and thus an abscess boundary is formed. The burrowing pus may pursue various and circuitous routes to an outlet. It may break down adhesions, extend its area, and excite a suppurative peritonitis involving the entire abdominal and pelvic cavities. It may perforate the parietal peritoneum and burrow along the cellular interspaces of the abdominal muscles. It may discharge through the loin, or through the scrotum, or perforate into the rectum, bladder, or pleural cavity. The abscess is always intra-peritoneal in its origin and seat, though it may discharge its contents at remote points.

The diagnosis of appendicitis, with any estimate of the extent and severity of the lesions, is not only exceedingly difficult, but, as a rule, impossible. In many autopsies evidences of appendicitis without extensive peritoneal involvement, and terminating in resolution, are observed. That such lesions are often mistaken for simple intestinal disturbances, or pass unnoticed, there can be no doubt. In many instances the attack is much more pronounced. It may be quite severe and characterized by pain, tenderness, swelling, and febrile action, and yet terminate in resolution and recovery. But the inflammation is very prone to recur and to terminate eventually in peritonitis and abscess. Dr. McBurney describes the case of a young lady, in which twelve attacks occurred in the course of little more than a year. She was relieved by removal of the appendix, which was swollen and inflamed.

In cases in which perforation most commonly occurs the history is different. The attack is sudden and the symptoms fulminant. This form of appendicitis is well illustrated by the following case upon which I operated in July last. I give the clinical history in the words of Dr. J. B. Kinnaird, of Lancaster, Ky., who attended the patient from the inception of the attack, and was present when I operated.

"Alice K., six years old, was attacked by pain in the abdomen, July 6, 1890. When I called she had had several small stools, and being informed by her mother that the child had been eating gooseberries, I considered it a case of cholera morbus, and prescribed a saline cathartic. The bowels acted, but on the following day she was not relieved, and continued to complain of pain. In the afternoon of this day she had a severe paroxysm of pain, referred to the ileo-cæcal region. On the morning of July 8th she seemed better. She had taken a small Dover's powder the night before and had rested well. In the afternoon of this day I found her lying on the lounge playing with her brother. She was bright and cheerful, but her temperature was 101° and pulse 140. On the following morning the abdomen was painful, especially about the ileo-cæcal region. I prescribed small doses of Dover's powder, and applied moist, warm applications. In the afternoon of this day there was tympanites, the legs were drawn up, features pinched, pulse rapid, temperature 103°, and vomiting occurred and continued. Dr. McMurtry was summoned from Louisville, and arrived during the night. Abdominal section was done on the following morning, July 10th, the fourth day of the illness."

On opening the abdomen by an incision along the outer border of the rectus muscle, several ounces of foul pus escaped. The intestines were matted together, but were readily separated, and the appendix found. I tied it off with silk and removed it. The abscess cavity was thoroughly irrigated and a rubber drainage-tube inserted. The little patient's pulse was rapid and feeble when she was put on the table. It did not improve after the operation, and she died ten hours subsequently.[1] The appendix was perforated in two places and contained a fæcal concretion.

This child was apparently in perfect health four days before her death, and the lesions shown in the specimen presumably occurred in that time. Her features were pinched, her belly tympanitic, pulse 150, temperature 103½°, tongue dry and furred, and condition extreme when the operation was done. She had general peritonitis.

This case is a powerful argument in favor of early operation when we view the lesions presented in the specimen.

A tumor of varying size can usually be made out in the early stage of appendicitis, but often this sign is not distinct until the patient is relaxed by an anæsthetic. The tumor is formed by infiltration and effusion about the cæcum, perhaps by pus, or by agglutination of the intestines.

Tympanites is a very inconstant symptom. Its presence or absence, or its degree, are of little value in determining the severity of the inflammation or extent of the lesions. Pain is a constant symptom, but often extends through the abdomen. Usually, however, a painful point can be detected on firm pressure immediately over the caput coli.

The patient assumes the dorsal decubitus, and, as a rule, draws up the right leg and retains it so.

The aspirator, as an exploring instrument, is unreliable and dangerous in inflammations deep in the right iliac fossa.

Rectal examination in the early stages of this disease is without value in the diagnosis, and is rarely of aid in any stage.

Rigidity of the abdominal muscles, more marked on the right side, is almost invariably present, and constitutes a valuable diagnostic sign.

A rapid pulse, varying degrees of fever, a chill, and vomiting are often present, but are so frequently absent as to be in themselves of no special significance.

When suppuration has occurred, rigors, sweats, and a dry, furred tongue are observed.

Perforation may occur without any special aggravation of the symptoms. In certain mild cases perforation or rupture may be accompanied by sudden aggravation of the symptoms; yet in other instances perforation has been found without any increase in the severity of the symptoms. From this it is apparent that no decision as to the propriety of operative interference can be based upon a diagnosis of perforation.

In order to illustrate the varying symptoms and sometimes protracted course presented by appendicitis, I will record here another case upon which I operated in September, 1890:

W. D. S., male, aged twenty-six years, was taken ill in June. He consulted a physician and received treatment. Diarrhœa came on, and he was confined to bed with pain in the bowels and fever, which were attributed to malaria. In July he travelled a short distance by rail to the Springs. Another physician then treated him for rectal disease by means of local applications. His troubles persisted and confined him to bed during the entire month of August. On September 1st I visited him at the Springs. He was emaciated, had frequent rigors, profuse sweats every night, a pulse over 100, and constantly elevated temperature. He was taking three grains of morphine daily. Pain and an oblong tumor in the right iliac fossa were present.

I performed abdominal section on September 6th, the incision being along the external border of the right rectus muscle. In opening the peritoneum, which was thickened and attached to the adjacent tissues, fully six ounces of putrid pus escaped. While irrigating the abscess cavity the sloughing appendix was washed out with the contents of the abscess. A double rubber drainage-tube was inserted, and frequent irrigation instituted. This was continued until the discharge ceased, which was at the end of nine days, when the tubes were removed. The patient's improvement was immediate and his recovery was complete.

This case, while illustrating remarkable tolerance and resistance of the peritoneum, is a distinct plea for operative interference.

Turning now to the treatment of inflammation of the appendix, the first and most important observation I would make, is that at the beginning of the attack we have no means whatever to determine whether the disease will pursue the course of the first case or that of the last case which I have reported in this paper. That is, we cannot foresee whether the patient will have general peritonitis, and be beyond rescue in three days, or whether, after a long illness with suppuration and destruction of the appendix, he can be restored to health. We cannot from any known symptoms foresee whether a case will be a simple catarrhal inflammation terminating in resolution, or a recurrent attack, or whether it will become an unprotected perforation, followed by immediate infection of the general peritoneum, and death. A recognition of this fact is of the utmost importance in deciding upon a plan of treatment. It gives to the so-called conservative plan, known as expectancy, an unseen peril which

[1] Dr. McMurtry exhibited the appendix to the members of the Association.

is generally wholly disregarded in the treatment of this condition.

So far as the use of palliative remedies is concerned, the treatment is limited to a few simple measures. A saline purgative, aided by an enema, in the early stage of the disease, will tend to reduce congestion, remove fæcal accumulations, and prepare for surgical interference. Opium obscures symptoms, arrests elimination, and is positively contra-indicated.

In view of the insidious nature of the disease, of its rapid progress, of its frequent recurrence, and of the early period in which apparently mild cases may assume a fatal character, operative treatment cannot justly be delayed. In a certain number of cases termination by resolution takes place in three or four days. When the symptoms are marked and the inflammation of high grade, lives will be lost by waiting even three days for spontaneous recovery. In the larger proportion of cases recovery will not occur by resolution, and they may at any moment assume a fatal character. In these cases abdominal section and removal of the appendix should be done as soon as the character of the disease is recognized. In connection with this, it is important to remember that the dangers of a recurrent attack are greater than those of a primary one.

The mortality of appendicitis, as heretofore recorded, is extremely severe. Fitz, who has recorded the largest number of cases, says: "Seventy-four per cent. recovered and twenty-six per cent. died. About one-half of these were treated medically and the other half surgically." This, of course, indicated that those treated surgically were operated upon late in the disease, which, we all know, means that the patients were practically moribund. The late operation has the enormous mortality of fifty per cent.

Every case of appendicitis passes through the great danger of an unprotected perforation before reaching the comparatively safe condition of abscess. The decision to operate should be determined more by the grade of the inflammation than by the time it has existed. When a diagnosis has been made, and three days have elapsed without diminished pulse-rate and temperature, operation should be done.

Finally, I would submit the following conclusions:

1. Inflammation about the caput coli is, as a rule, appendicitis.

2. A certain proportion of cases will recover spontaneously by resolution. With these, recurrence of the disease is common.

3. In the larger proportion of cases the disease endangers life, and may at any moment assume a practically hopeless condition.

4. Operation involves less danger than delay, and should be resorted to in all cases in which a high grade of inflammation is persistent.

5. The essentials of the operative technique are brief anæsthesia, quick and thorough work, removal of the appendix, irrigation, and drainage. The lateral incision is preferable to the median.

DISCUSSION.

In discussing this paper, Dr. Joseph Price, of Philadelphia, agreed with the author upon the necessity of operating early in cases of appendicitis, and said that prompt evacuation of pus, wherever situated, is the only proper method of treatment. He then reported some illustrative cases which had occurred in his own practice.

Dr. Bedford Brown, of Alexander, Va., referred to a remarkable case of typhlitis that came under his care during the late war. The patient was a Confederate soldier, and was brought into the speaker's field-hospital, Richmond, in the summer of 1862. It was supposed that he had an abscess on the inner side of the knee-joint. He was greatly emaciated and had fever and night-sweats. The patient called attention to a swelling in the right iliac region, which was accompanied with pain and tenderness. Dr. Brown opened the abscess near the knee freely, and evacuated half a pint of pus. Mixed with the pus were grains of green corn, tomato seeds, small chicken bones, and blackberry seeds. A cæcal abscess had evidently formed, and the pus had escaped under Poupart's ligament through the femoral ring, followed in the course of the sartorius muscle, and finally accumulated on the inner side of the knee-joint. The fistulous opening was probed with a soft male catheter, and found to extend up to Poupart's ligament. Finally it closed, and the man recovered completely and resumed his duties as a soldier.

Dr. Brown's subsequent experience with typhlitis comprised only six or seven cases. Of these, all recovered under general treatment but one, and that one was finally operated on and died shortly after.

Dr. G. Frank Lydston, of Chicago, referred to the very great progress which has been made in recent years in the diagnosis and treatment of this class of affections. Dr. McMurtry had well said that inflammation of the cellular tissue is not the cause of the inflammatory affections which occur about the head of the colon. It might be said that the cellulitis which occurs in this region bears the same relation to the pathological foundation of the process that so-called, pelvic cellulitis, bears to pathological conditions affecting the uterine appendages, although a little more importance should be assigned to the part which the cellular tissue plays in the pathological conditions incident to appendicitis. There is no question, he thought, that in many cases inflammation of the extra-peritoneal cellular tissue—*i. e.*, Velpeau's membrane—has much to do with some of the peculiarities of perityphlitic abscesses. This is especially true in retro-cæcal abscess. He also differed from Dr. McMurtry in the opinion that the inflammation and abscess are always intra-peritoneal. Leaving out of consideration those recent anatomical dissections to which allusion was made, there is no question that in some instances the inflammation may agglutinate the

peritoneum about the appendix and perforate into the retro-peritoneal cellular tissue. This, Dr. Lydston thought, is the explanation of the slowness with which some abscesses in this location come to the surface. Instead of the induration being at once manifest, it may be several days or weeks before it can be detected; the abscess, meanwhile, burrows along the planes of cellular tissue in the iliac fossa to the ilio-lumbar region, and may appear at some distance from the head of the colon, or may gradually burrow outward toward the loin and both downward and upward in the direction of the groin until at one or more points it becomes perceptible to the touch. In a considerable experience with the conditions described by Dr. McMurtry, the speaker had observed several cases of this sort, and in one instance in which he operated he was confident that the process was extra-peritoneal and that the abscess had burrowed upward in the direction of the kidney, as well as downward into the iliac fossa.

Another point that must be considered, he said, is that if all these abscesses be regarded as primarily intra-peritoneal, the operator may lose sight of the fact that in some cases he can do what is practically an extra-peritoneal operation, for, as Dr. McMurtry admits, there is a barrier produced by adhesions between the collection of pus and the general abdominal cavity.

Dr. Lydston believed that some cases are due to inflammation which does not begin in the appendix, but in the colon proper; this inflammation may, he thought, extend to the cellular tissue outside of the colon, without there being necessarily any perforation. The same is true in cases in which the inflammation primarily or secondarily affects the appendix.

The question of the relation of foreign bodies to this process is quite definitely settled; the foreign body, however, is not necessarily of extraneous origin. Very frequently, as a consequence of constipation, catarrhal colitis is set up; this extends to the appendix, and there is slight swelling of the appendico-cæcal opening. Mucus collects in the appendix; a small amount of fæcal matter gets into the little tube during straining at stool, but fails to get out again, and forms, in combination with the mucus, a small fæcal stone. Sometimes this fæcal stone is formed in the cæcum, and is forced into the appendix. Oftener, however, it forms in the appendix proper. The concretion may set up inflammation in and about the appendix, or may perforate and in that way cause inflammation and suppuration. Sometimes the fæcal stone escapes into the pus and becomes dissolved. This, the speaker thought, is the explanation of those cases in which perforative ulceration of the appendix is found, and yet no foreign body is discernible in the pus-sac. Dr. Lydston believed that in every case in which perforation occurs there has been a foreign body of some kind.

In general, the causes of perityphlitis may be said to be (1) fæcal impaction in the colon; (2) fæcal stone; (3) extension of catarrhal colitis, with occlusion of the mouth of the appendix; (4) foreign bodies of extraneous origin; (5) traumatism. The latter may be disputed, but the speaker has seen one case in which traumatism seemed to be the cause. Many cases of appendicitis remain catarrhal.

The diagnosis of perityphlitic abscess is not always easy. He recalled one case in which he was ready to operate, the symptoms pointing to the presence of pus, and the fulness of the ileo-cæcal region and tenderness of that point seeming to warrant an operation. Operation was, however, refused, and the patient recovered after the passage of a large amount of fæces. Fitz reports a case of circumscribed peritonitis in the right iliac region diagnosed as appendicitis, which at the autopsy was proven to be abscess of the liver due to catarrhal colitis. In a second case, diagnosed appendicitis, the post-mortem examination disclosed a suppurating subperitoneal gland due to gonorrhœal infection. In a third case salpingitis was mistaken for appendicitis. In a case of his own there was appendicitis with a small abscess, but all of the symptoms which existed prior to the operation have since persisted, and are unquestionably due to spinal irritation.

The mortality-rate reported from operations for perityphlitic abscess should not guide us in the question of operating, as these cases are usually operated on very late. The results of surgical treatment depend a great deal on what is done. For example, the operation may be (1) extra-peritoneal; (2) intra-peritoneal; (3) the appendix may be resected; (4) the operation may be no more formidable than the lancing of an abscess.

A valuable point in diagnosis is the fact that when an abscess forms behind the cæcum and tends to burrow upward toward the kidney, there will be marked irritation of the psoas muscle with flexion of the thigh, crural neuralgia, and great pain on attempting to straighten the limb.

As for aspiration it can only be condemned. If pus has not formed the abscess does not need aspirating, and after it has formed aspiration does no good. It is dangerous and illogical.

Fæcal fistula occurred in one of his cases after operation, the procedure having been delayed too long. The fistula, however, healed within three weeks. The most important point in connection with perityphlitic inflammation is, in his opinion, that many children who are said to have idiopathic peritonitis have had, primarily, inflammation about the appendix. In children the inflammation extends to the sensitive peritoneum so rapidly that a fulminant peritonitis results and destroys the patient's life long before the period when, in the adult, suppuration and a distinct tumor would be observed. The speaker wished to put himself on record as denying the existence of idiopathic peritonitis in children; all the cases are due either to some disease of the bowels, of which appendicitis is one of the most frequent conditions, or to traumatism. As Dr. McMurtry suggests, operation should be the rule in perityphlitic inflammations. It is well to remember, however, that a proper selection of cases is necessary here as elsewhere. Not all cases require operation, but whenever pain, induration, rapid pulse, and high temperature tend to persist the operation should be done; also whenever the induration is marked it should be performed without delay.

DR. JOHN D. S. DAVIS, of Birmingham, Ala., could not agree with the essayist as to the cause of appendicitis. It is sometimes, though in rare instances, the result of concretions, of various kinds, of seeds, etc.

The method of operating by ligating the appendix is a very hazardous procedure indeed, and the method

suggested by Dr. Price is the wisest course to pursue. The appendix should be amputated closely, pushed in, and then closed with Lembert sutures. We often find in this region that the inflammation has continued so long that the serous membrane is destroyed, and we will not have primary adhesion, even when it is closed, serosa to serosa, with Lembert sutures. Therefore, it is the best policy to amputate close to the cæcum, close the mucous coats with a continuous suture, then push the stump in and unite, serosa to serosa, by means of the interrupted suture.

DR. J. MCF. GASTON, of Atlanta, Ga., said that he first called the attention of the profession to appendicitis at the meeting of the American Medical Association in St. Louis. He has written papers on the subject since, but instead of referring to them he would briefly report the case of a physician which came under his observation recently, and which terminated fatally without having time to develop suppuration, but presented the symptoms of collapse, resulting from perforation. At the post-mortem examination the fact that there had been ulceration was verified. There seems to have been a cause which could not be discovered. The patient had been repeatedly eating grapes at his breakfast for some time, but unfortunately the undertaker injected a large quantity of fluid into the abdomen, which rendered it impossible to determine definitely the cause of death. There was evidently an opening at the most dependent portion of the appendix, but this looked as though it had previously existed and had been shut off by a circumscribed inflammation around it, which prevented the development of serious consequences. There was another ulceration or perforation near the attachment of the appendix to the cæcum, and it was evidently through this that the contents of the cæcum had discharged into the peritoneal cavity and led to the collapse.

In a large number of post-mortem examinations of the results of appendicitis, apart from this case, the speaker has not failed to recognize that perforation of the appendix, or inflammation without perforation, resulted from concretions in the appendix or from foreign bodies lodged in it.

He thought that the position taken by the author of the paper is not sustained by statistics. He agreed with Dr. Price that, in a large proportion of cases, the disease results from the presence of foreign bodies or concretions in the appendix, and he is convinced of the necessity for early operation in these cases.

In order that an operation should be successful it must be done early, and in all cases we should operate as soon as we suspect appendicitis.

A CASE OF INTESTINAL ANASTOMOSIS WITH CARTILAGE PLATES, FOR TRAUMATIC STRICTURE OF THE ILEUM—RECOVERY.[1]

BY M. STAMM, M.D.,
OF FREMONT, OHIO.

IN the evening of September 7, 1890, I received a telegram from Dr. Beardsley, of Ottawa, Putnam County, Ohio, worded: "Come immediately, prepared for abdominal work." I could not reach the doctor until noon of the next day, and on my arrival he gave me the following history:

"I was called on August 20th one and one-half miles east of Ottawa, to see a little son of Henry Agner, about seven years old, who had been run over by a loaded wagon. On my arrival I learned from the father, who was driving the vehicle, that his load consisted of gravel. The patient, with his brother, was upon the load playing, when the latter cried out: 'Mackey has fallen off and the hind wheel has run over him!' The father picked up the boy, who seemed not to be badly injured, and carried him to his own house, which was not more than two hundred rods away, and sent immediately for me.

"On inspection I could plainly see the mark of the wheel across the boy's body just below the umbilicus. There was paralysis of the lower extremities, but the boy did not complain of pain unless an attempt was made to move him. I applied a flannel bandage, well padded with cotton-wool, snugly around his body, but gave no medicine. On the next morning I found my patient quite cheerful, but having some pain. Ordered $\frac{1}{10}$ grain of morphine every hour until relieved. I saw him again on August 22d, and found him up and feeling well, as he expressed himself. On August 28th, he was suffering severely from disturbance of the bowels. His mother informed me that he had visited the grape arbor quite frequently during the last few days, and she suspected that he had overloaded his stomach with grapes which were not fully ripened. I prescribed a mild saline (Rochelle salt) but was sent for again on the same day and found that he had not retained the salt. I then prescribed an enema of table-salt and water, which brought away some feculent matter containing an abundance of grape-seeds. I did not visit him again until August 31st, when the pain became so severe that every breath was a moan. I also heard that no further movement of the bowels had occurred since the enema. I again prescribed Rochelle salt, but with the former results. By the use of morphine I was able to control the pain and make the boy somewhat comfortable until September 5th, up to which time there was no bloating of the abdomen, and flatus occasionally passed from his anus.

"From this time tympanites became very extensive, and morphine no longer controlled the pain. I now advised an operation, explaining the technique and endeavoring to make the parents fully understand the gravity of the procedure as well as the boy's present condition, but consent to operate was not given until September 7th."

When I saw the little patient in the afternoon of September 8th he presented tympanites to a high degree. There was no rise of temperature, his pulse was about 108 per minute, and he had vomited in the morning. As he was under the influence of morphine there was no pain on pressure. On examining the rectum I found it empty, and there were no signs of a tumor. Dr. Beardsley had

[1] Read before the Northwestern Ohio Medical Association, at Lima, Ohio, December 11, 1890.

explained to the family before my arrival the possibility of an injury to the bowels, of strangulation due to adhesive bands, or of a slit in the omentum, etc., with which I could only concur. I cannot let this pass without complimenting the doctor for the thoughtful manner in which he made the preparations necessary for an operation, so that in fact very little was left for me to do other than to proceed. I insert this compliment especially, because I think if every practitioner were imbued with the importance of an early operation in cases of obstruction of the bowels, instead of temporizing with all the different methods which are harmful because in many instances they injure the bowels and defer an operation too long—generally to the last stage—it would put surgeons in a position to report more successful cases than we have hitherto been able to do. Moreover, I think that in a number of cases collapse has been caused by the persistent efforts to move the bowels.

Operation.—An incision about three inches long was made below the umbilicus. The intestine was

FIG. 1.

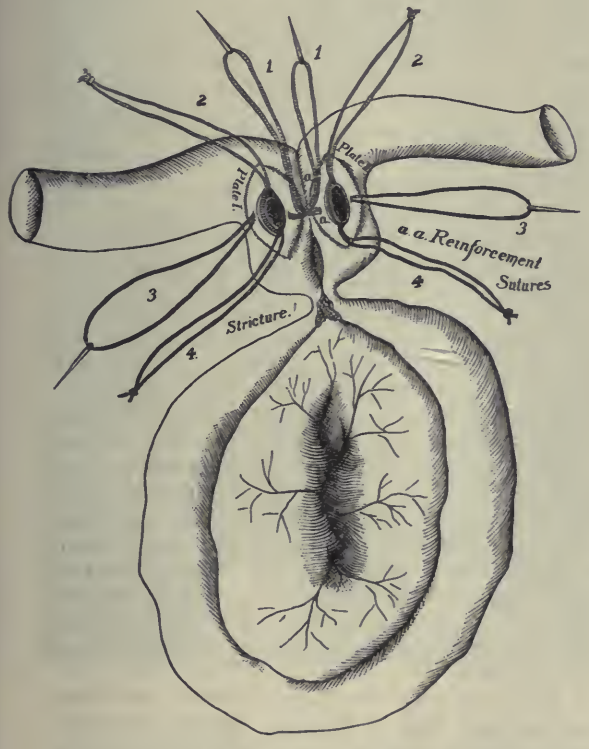
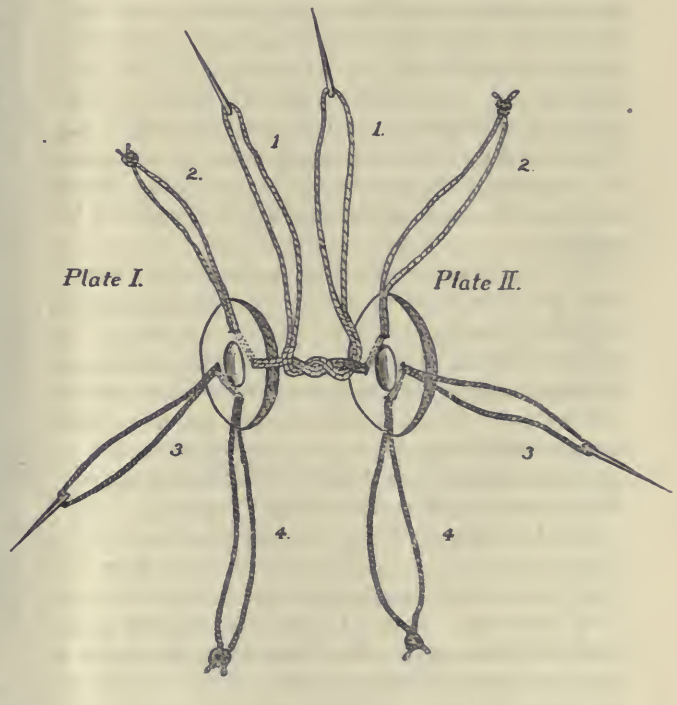


FIG. 2.



so distended that a portion several feet long forced itself through the wound and I had to puncture it in order to get at the seat of obstruction. As there was some bleeding from the puncture I closed it with two sutures. In groping for the cæcum I found an empty coil of the ileum, and, about ten inches from its insertion into the larger intestine, a double stricture revealed itself, of which the accompanying illustration (Fig. 1) may give an idea.

The mesentery of both segments had evidently been lacerated, and judging from appearances the outer coat of the ileum also was injured near its mesenteric attachment, so that the cicatricial contractions, combined with the agglutination of both mesenteries were sufficient to form a stricture which would hardly admit a small lead-pencil. I therefore decided upon intestinal anastomosis, without resection of the strictured coil, which was nearly twelve inches long. In order to prevent the escape of intestinal contents the bowels were compressed by means of elastic bands passed through the mesentery and fastened on the convex side of the intestine with small hæmostatic forceps. As one of the loops was not sufficiently emptied of its contents, probably owing to the fact that by handling the strictured coil some mucus and feculent particles were squeezed into the emptied coils, a small quantity of mucus and fæcal matter escaped on incision and somewhat soiled the field of operation. The soiled parts were immediately and thoroughly irrigated with warm water. After incisions about three-fourths of an inch long were made in the afferent and efferent coils, I introduced medium-sized plates armed with *black* and *white* threads in the manner that I demonstrated last year.[1] I also used five reinforcement sutures and after a second irrigation of the extruded parts I dropped them into the abdominal cavity.

With the exception of an abscess over the parotid region, which was opened by Dr. Beardsley on the eleventh day, the boy made such a rapid recovery that he was able to visit the county fair on October 2d. His bowels moved spontaneously on the third day after the operation. The plates were never

[1] THE MEDICAL NEWS, February 1, 1890.

found in the stools.[1] Judging by the amount of food which he consumes, there is little probability that the anastomosed opening will ever have a chance to contract.

A few words may be said in regard to the plates. Senn's bone-plates, when properly prepared, seem to answer the purposes in every respect, in point of coaptation as well as absorbability. Any modification of them could be made only in the direction of simplicity, as it is well known that their preparation requires an undue amount of work and time. All this, as I demonstrated before the Northwestern Ohio Medical Association last year, I have overcome by cutting my plates from the lower angle of the shoulder-blade of young cattle (not calves, as the latter would be too soft). This portion of the scapula is cartilaginous, and of sufficient firmness, and can be readily cut with a penknife, in fact the preparation requires only a few minutes. The fear that such plates would be too rapidly absorbed, as maintained by some experimenters, is, in my opinion, more the product of exuberant fancy than the result of careful experimental or clinical observation. I have kept them in a warm solution of salt and found them after forty-eight hours nearly as firm as at the time I put them in. Should such a fear exist, as for instance in anastomosis of the upper portion of the intestinal tract or the stomach, it is only necessary to cut a little deeper into the bony portion of the scapula, when any consistency that is desired will be found.

Dr. Senn, in his paper read at Nashville, Tenn., May 21, 1890, made an erroneous statement, though not intentionally, when he said: "Dr. Stamm, of Fremont, Ohio, made plates of the thin portion of the scapula of a calf, and used them in a gastro-enterostomy for carcinoma of the pylorus. The patient died forty days after the operation, and at the necropsy the plated inserted in the stomach was found unchanged in this viscus." I said:[1] "But, again, I do not think it necessary to use *undecalcified bone-plates* for the gastric portion, as in my case it was found nearly intact in the stomach after forty-five days. I have of late prepared my plates from the lower angle of the shoulder-blade of young cattle (a heifer two years old). They can readily be cut with a knife, and are ready for use in half an hour. . . . ." The fact is, that the thought of using cartilage plates suggested itself to me after I made my gastro-enterostomy; for that particular case I used for the stomach a *slightly decalcified bone* from the tibia of an ox. As I have demonstrated before, I also deviate from Dr. Senn's way of arming the plates: his *lockstitch* seems to me a complicated one, and has not the slightest advantage over my method. I do not drill any holes for the threads in my plates, as they can be readily transfixed by the threaded needle. The use of black and white thread has also materially lessened confusion in tying the knots, a thing which will, no doubt, be appreciated by those who have so far used threads of but one color. The only point to be observed is (see Fig. 2) that the white thread should, for instance, transfix plate No. 1 on the right side and plate No. 2 on the left side, and then be tied in their respective order, as shown by the numbers.

[1] The boy was present at the meeting and was a picture of perfect health.

[2] THE MEDICAL NEWS, February 1, 1890.

A CASE IN WHICH CYSTIC DEGENERATION OF THE KIDNEYS OF A FŒTUS PREVENTED DELIVERY.

BY M. HOWARD FUSSELL, M.D.,
CHIEF OF THE MEDICAL DISPENSARY OF THE HOSPITAL OF THE UNIVERSITY OF PENNSYLVANIA.

MY friend, Dr. A. H. Mellersh, of Roxborough, called me to see a case of labor on the morning of October 22, 1890, and to him I am indebted for the privilege of describing this interesting specimen.

Mrs. X., aged twenty-eight years. Third labor. Her first child was born healthy and is still living. The second child was born eighteen months ago. The head and shoulders were born without trouble, but considerable difficulty was experienced in delivering the abdomen. The child lived for a few minutes only, and a certificate of death from malformation of the kidneys was given.

The last pregnancy was not attended by any special symptoms, except, perhaps, an unusual amount of abdominal pain.

Dr. Mellersh was called about 4 o'clock on the morning of October 22d. The vertex presented, and the head descended and was delivered without trouble, but further progress was not made. The doctor then delivered the arms and made forcible traction, but without delivering the child. At 6 A.M. I was called and found that as much traction as was permissible had been made. The woman was etherized, and on introducing my hand into the uterus the enormously distended abdomen of the child could be easily felt. The child, of course, was dead. The distended abdomen was punctured, but only a slight amount of fluid escaped. Further examination made it certain that the enlargement of the abdomen was due to a solid tumor, or rather what felt like a number of tumors.

The opening was at once enlarged and the child partially eviscerated. The liver and intestines came away first. One of the tumors was then grasped, traction made, and the infant easily delivered. The mechanism was, doubtless, that one tumor was pulled ahead of the other, thus at once diminishing the girth of the child's abdomen and permitting delivery.

The infant was a rather large male. The abdo-

men was much enlarged, and measured eighteen inches in circumference at umbilicus.

On examination the following conditions are seen: Both kidneys enormously enlarged; the left measuring six by five inches, the right five by four inches. Both still have their original form, are lobulated, and are the seat of cystic degeneration. The mass is composed of a multitude of small cysts, varying from the size of a pea to that of a pin-point.

On section the cysts are seen to be filled with a clear fluid resembling urine. The left kidney is connected with the lower part of the abdomen by strong bands, which are apparently folds of the peritoneum and not adhesions. The hilum is near the lower end.

The ureters are plainly seen as small white cords, running over the lower end of the kidneys, and leading into the empty, contracted, elongated bladder. They are patulous. The pelves are buried in the mass of cysts. The bloodvessel supply is normal. The suprarenal capsules are enlarged. The heart is much hypertrophied, is about three times the normal size, and feels like a solid mass of flesh. The ventricles are small. The walls of the left ventricle are five-eighths of an inch thick, those of the right three-eighths of an inch thick. The valves are normal, but from the great thickness of the ventricular walls one would suppose that they were practically useless. The right testicle is in the abdomen, the left is in the abdominal ring. There were no other abnormalities noted.

The mother made a good recovery.

Congenital cystic degeneration of the kidneys is a well-known lesion, and has been the subject of numberless essays. Although infants with this condition are stillborn or die soon after birth, what is apparently the same condition has been found in adults.

Frequently the degeneration is connected with various other malformations, such as hydrocephalus, malformation of the genitals, etc.

The same woman has been known to give birth to several children with cystic degeneration of the kidneys.

In 1845 Virchow[1] carefully examined a case and expressed the opinion that the original seat of the cyst-formation is in the uriniferous tubules or in the Malpighian capsule, and that during the progress of the disease these cysts may lose their connection with the tubule from which they started. He believes that the original occlusion is frequently due to infarcts of uric acid salts, although it may be due to an inflammation starting in the pyramids. From the fact that the same woman may give birth to successive children with this abnormality, he thinks that the uric-acid diathesis in the mother may be the original cause of the trouble in the child.

Virchow's explanation of the process is accepted by most of the pathologists of to-day, although I think they repudiate the idea of the uric acid diathesis as a cause.

The normal kidney-substance is more or less destroyed in all cases, but in most there can be found here and there areas of comparatively normal kidney-substance.

Uhde[2] gives the notes of a case in which some of the glomeruli were normal, some were filled with yellowish epithelium, and some were entirely cystic. The cysts were lined with the epithelium common to the normal capsule. This case, to my mind, is convincing as to the capsules or tubules being the original seat of the cysts.

Though congenital cystic degeneration of the kidneys is so well known pathologically, it is extremely rare as a cause of dystocia. Most of the writers on the subject mention malformation of the kidneys as a possible, but rare, cause of dystocia.

In a rather careful search of the literature I have been able to find but eleven cases in which the kidneys were sufficiently large to impede labor, and only one case in which mutilation of the child was necessary. Doubtless other cases exist, but I have been

[1] Gesammelt Abhandlungen, p. 870.

[2] Monatsschrift für Geburtsheilkünde, 1856.

unable to find them. It will be interesting to cite a few of these cases.

Bruckner[1] cites the case of a woman who at two different labors gave birth to children with cystic kidneys. Both children were malformed in other respects. One of the children was dismembered in order to effect delivery.

Duffry:[2] Third pregnancy; breech presentation, cystic kidneys; hydrocephalic monster, with malformed hands and feet.

Siebold:[3] Child was also hydrocephalic; much difficulty in the delivery.

Carmack:[4] Child born at term; cystic degeneration of both kidneys. Much difficulty in delivery.

Oesterlen[5] gives the history of a case and a picture of the child with the kidneys in position.

There is an excellent bibliography of the subject in the *Dictionnaire des Sciences Méd.*, vol. iii., 3d series, page 294.

My case is the first of the kind presented to the Philadelphia Pathological Society. It differs from most of the reported cases in being, apart from the kidneys and associated lesions, a perfectly normal child.

The hypertrophy of the heart in this case is either unusual or, in other cases, has escaped notice, for in none of the reports do I find it mentioned. In some of the reports the heart is said to be normal, in others it is not specially mentioned. There seems to me to be every reason for hypertrophy of the heart in such cases, for although the heart of the fœtus is only secondary in supplying blood to the different parts, its work must be many times increased by the great resistance offered to the circulation not only in the kidneys themselves, but in the whole abdomen and chest, owing to the pressure of the greatly-enlarged kidneys.

It is interesting to note that in my case the hypertrophy is not limited to the left side of the heart, but is almost equally great on the right side. This would be expected, inasmuch as the right side is directly connected through the conus arteriosus with the general circulation, and hence must be affected by any undue pressure in that circulation.

The practical lesson of this case is: When difficulty is experienced in delivering the abdomen of a child, at once anæsthetize the woman, introduce the hand into the uterus and find the cause of the detention. If the child's abdomen is enlarged, and traction has been made, at once puncture the abdomen. In this case the instrument used was an ordinary pair of shears. An opening was made in the chest, my hand introduced into the abdomen of the child, and the operation continued as described.

I cannot imagine why an obstetrician should pull at the child for ten hours, as was done in one of Bruckner's cases, in which dismemberment was finally necessary, when evisceration is so easily and speedily performed.

[1] Virchow's Archiv, xlvi. p. 503.
[2] Medical Times, 1866.
[3] Monatsschrift für Geburtsheilkünde, 1854.
[4] Lancet, 1845.
[5] Zeitschrift für Geburtsheilkünde, viii. p. 384.

SCIATICA, NEURALGIA, OR NEURITIS?

By L. HARRISON METTLER, A.M., M.D.
of Philadelphia.

While an indefinite terminology has frequently served as a convenient cloak for human ignorance, it has always more or less retarded the progress of scientific knowledge. Such names as gastralgia, myalgia, neuralgia, essential paralysis, consumption, and locomotor ataxia, may be very comforting to employ in certain obscure cases, but their careless and indiscriminate application to well-recognized symptom-groups and pathological states is an unwarrantable looseness in the use of language, and seems much like a confession of ignorance or of indolence. Not infrequently the use of such general terms becomes so soothing to one's conscience that all further effort toward a more accurate study of the case in hand grows irksome and seemingly unnecessary. Many cases of gastric ulcer and cancer have doubtless been neglected, at least in their incipiency, with the easy explanation that they were merely unaccountable gastralgias. There was no question as to the presence of the pain, and since science permits the use of the term gastralgia, it was employed, both for the sake of convenience and for its own peculiar scientific ring. The early pains of posterior spinal sclerosis have been notoriously mistaken for the pains of rheumatism; and as rheumatism has grown to be such a convenient name for all sorts of indescribable aches, acute and chronic, nothing is easier than to look wise and pronounce the pain rheumatic. Who knows how many years our knowledge of acute anterior poliomyelitis has been delayed by the high authoritative support which the name "essential paralysis of childhood" received when the disease was first described!

Neuralgia and neuritis are almost constantly being confounded with each other, and though many cases of so-called neuralgia are plainly instances of neuritis, it is much more convenient, in the hurry of general practice, to call cases of painful nerves by the undeniable but meaningless name of neuralgia than it is to study the electrical reactions and other symptoms characteristic of neuritis. Dana[1] found, after a close study of the subject, that true idiopathic neuralgia was a rare disease, constituting not more

[1] New York Medical Journal, 1887.

than two or three per cent. of the different forms of nervous disorders. Symptomatic and reflex neuralgias were far more common. These statistics confirm those of Classin, of Kiel, who collected 434 cases. And yet how many cases in general practice we hear of being diagnosed and treated as idiopathic neuralgia! This lack of careful study has retarded not a little our knowledge of the inflammation of nerves. Obviously here is a strong argument in favor of "specialties." The general practitioner may have frequent opportunities and, at times, superior ability for the study of these special diseases, but rarely does his inclination or time allow him to improve his opportunity or exercise his special ability.

In no single affection is the truth of the foregoing remarks more clearly illustrated than in that which is commonly described under the head of sciatica. It may be rash to dogmatize in regard to a disease which affords so few opportunities for post-mortem examination; nevertheless the majority of the supposed neuralgias of the sciatic nerve are beginning to be recognized as undoubted cases of sciatic neuritis. Both the symptomatology and the therapeutical results indicate such a condition. There have been considerable confusion and self-contradiction among the authorities upon sciatic neuralgia. Thus Flint declares that the affection ranks in frequency with facial and intercostal neuralgia, and that in the great majority of cases it is a functional affection. Then after giving a clinical picture of the disease which would serve as an admirable description of sciatic neuritis, he says, "sciatic neuralgia, rarely, as compared especially with facial neuralgia, exemplifies, in the recurrence of paroxysms, the law of periodicity." He describes the pain as always of a constant, boring character, unlike the ordinary, sharp, shooting pains of other neuralgias. He and many other writers whom I have consulted on this point, advance as an important symptom of sciatica the fact that the pain follows the course of the nerve and that the patient can thereby trace its anatomical situation; yet this is almost a pathognomonic sign of neuritis.

The etiology of sciatica is remarkably like that of neuritis and unlike that of the other neuralgias. Note a few of the causes of sciatica recorded in one of the recent text-books upon nervous diseases: Traumatism, exposure, gout, rheumatism, syphilis, and malaria. Lawson says that nine-tenths of the cases of sciatica are due to exposure to cold; while Erb insists upon the preëminence of this above all other causes. Not only are these found to be the most common etiological factors in decided cases of neuritis, but it is hard to understand in the light of our present knowledge of the nervous system how such factors can give rise to any other condition than that of inflammation. Surely it is a high degree of ultra-conservatism to admit that direct injuries, exposure to cold and poisoned states of the blood may and do give rise to inflammations in the brain, spinal cord, and other organs of the body, while in the nerves they produce only that kind of change of nutrition which is involved in the idea of neuralgia. It is a significant fact, when considered in this connection, that heredity and predisposition are of less importance in the etiology of sciatica than in neuralgia of the other nerves. Therefore, had not a single post-mortem examination of a painful sciatic nerve been made, the close similarity between neuritis and so-called sciatica in their etiology alone would incline us to believe that the latter is really a condition of inflammation.

In passing, it is interesting to note that Quenu[1] found in persons suffering from varicose veins, the veins in the interior of the sciatic nerves greatly dilated. Out of sixty-seven individuals with varicose veins, eleven were the victims of sciatica. A private case now under my care is that of a strong German woman, fifty-two years of age, with varicose veins of the right leg, who suffers at rare intervals with slight attacks of pain along the course of the corresponding sciatic nerve. An elastic stocking and the internal administration of hamamelis are affording her marked relief.

A comparison of the symptoms of sciatica with those of neuritis confirms still more forcibly the inflammatory origin of the former. It is oftener the rule than the exception for the inflammatory process in neuritis to be more intense at certain spots in the course of the nerve; indeed a large number of these cases might well be called *focal* neuritis, on account of the higher degree of inflammation at these points or *foci*. The pain, which is equally sharp if not sharper, in acute neuritis than in idiopathic neuralgia, which is almost as sudden in its onset, and at times quite as intermittent, is always most severe at these foci. What, therefore, are these tender points of neuritis but the long-recognized *puncta dolorosa* of neuralgia? Even in a general diffuse neuritis, the nerve is extremely sensitive and if it be pressed where it approaches certain bony prominences, the pain will be felt most keenly at those localities. In sciatica the puncta dolorosa are usually described as being situated in the neighborhood of bony prominences. According to Valleix, who first drew attention to them, these points correspond to the posterior superior spine of the ilium, the spine of the ischium where the nerve escapes from the pelvic cavity, the great trochanter of the femur behind which the nerve runs near the border of the gluteus maximus, the head of the fibula, the internal malleolus and

[1] La Semaine Medicale, 1888.

the dorsum of the foot. It is unnecessary to insist that at these points the nerve gives off large and important branches, for this only mystifies still more the explanation of the pain at these localities; furthermore, the explanation, whatever it be, will not apply to those inconstant points which sometimes appear at the middle of the thigh and in the calf of the leg. Pressure caused by the products of inflammation is a much more rational and physiological explanation of so common a phenomenon.

In neuritis it is easy to explain the tenderness of the nerve-trunk by means of the inflammatory irritation and pressure upon the nervi nervorum, but in neuralgia, in which there is supposed to be no perceptible lesion of the nerve-trunk, it is difficult to comprehend how such exquisite local pain can originate. Physiologists tell us that a nerve-fibre is sensory or motor according to its termination in sensory or motor organs. If, for instance, it is attached at its distal extremity to the tactile corpuscles of Meissner, the Pacinian bodies or other sensory-end organs, while at its proximal extremity it is associated with the sensory cells of the cortex, it is a sensory nerve. If, on the other hand, it begins in the large motor cells of the cerebral cortex or anterior horns of the cord and terminates in the motor end-plates of the muscular tissues, it is a motor nerve. Without these aids it is absolutely impossible to distinguish motor from sensory nerves, for in histological structure they are identical. A simple nerve-fibre, when separated from its end-organs, has no power to distinguish motor from sensory impulses. It is a question whether nerve-fibre can even perceive a sensory or motor impression unless that impression be received and evolved by a special end-organ. While the nerve-fibre is thus in itself entirely insensible, the nervi nervorum ramifying in its sheath cause it to appear extremely sensitive. These nervi nervorum have been demonstrated in the sheath of the optic nerve by Sappey and in other nerves by Horsley.

According to Magendie, Arloing and Tripier, most nerves receive recurrent fibres from adjacent nerves; these probably end in the nerve-sheath also, and being of different lengths may give rise to pain at different points in the course of the nerve-trunk. At all events, the fact remains as stated in the last edition of Kirke's *Physiology*:

"Nerve-fibres are stimulated to act by anything which, with sufficient suddenness, increases their irritability, but they are incapable of originating of themselves the condition necessary for the manifestation of their own energy. The stimulus produces its effect upon the termination of the nerve stimulated, being conducted to it by the nerve-fibre. The effect of the stimulus upon a nerve, therefore, depends upon the nature of its end-organ."

This is proved by the following experiment:

"A length of a nerve-trunk, when freshly removed from the body, if stimulated midway between its extremities, will, as shown by the deflection of a needle of the galvanometer at either end, conduct the electrical impressions in either direction and it may be considered therefore only an accidental circumstance, as it were, whether when *in situ* it has conducted impressions to the central nervous system from the periphery or from the central nervous system to the muscles or other tissues."

In neuralgia there is no change in the nerve-trunk so far as modern pathology can discover, so the nervi nervorum are not directly affected. There are no sensory cells along the course of the nerve to receive painful impressions and transmit them directly to the brain. Yet neuralgia is one of the most painful of all affections, and the pain, as in sciatica, is even more intolerable in the nerve-trunk than at its peripheral extremity. Those who deny the inflammatory character of these painful sciaticas have no easy task before them to explain the immediate cause of the pain. In opposition to all the teachings of physiology, they must show how an inert nerve-fibre, capable merely of transmitting centrifugally or centripetally the impressions which it receives, can, when unaffected by any perceptible source of irritation within or outside of its own substance, give rise to the most excruciating agony. Does it not seem singular that this mysterious agent can thus arouse to the highest degree the function of sensory nerves, and yet not affect the motor nerves? The motor nerves are like sensory nerves; yet *motor* spasm, pure and simple, is not a symptom of neuralgia.

The only way out of the dilemma, it seems to me, is to adopt the view that makes neuralgia a central disease, a kind of Jacksonian epilepsy, if I may be permitted the phrase, limited to the sensory areas of the cortex. The hypothesis, however, will be hard to maintain in conjunction with the many other symptoms of sciatica, of which I will speak later on.

In typical neuritis there are associated with the pain along the course of the nerve-trunk, peculiar sensations, paræsthesiæ, and various degrees of motor paralysis in the parts supplied by the nerve and its branches. The combination of these two sets of symptoms, pain in the course of the nerve and various spontaneous motor and sensory phenomena at its distal extremity, is almost pathognomonic of an inflamed nerve. Pressure upon the nervi nervorum and the recurrent fibres sufficiently explains the former, while interference with the power of conduction in the inflamed nerve-trunk itself readily accounts for the latter. Yet the books assert that in simple neuralgia of the sciatic nerve there occur various paræsthesiæ, tonic and clonic spasms in the leg, and even considerable degrees of paralysis; in other words, when the nerve is apparently

unchanged histologically, it is affected functionally in such a mysterious manner as to give rise to paralysis and symptoms of irritation at the same time. The argument itself is a *reductio ad absurdum*. The nerve, it is asserted, is so sensitive that the affection itself is worthy of the dignity of the special name, neuralgia; while at the same time the nerve is so dead as to fail in the proper conduction of received impressions. Usually, irritation is the cause of muscular spasm; here, however, irritation is made more frequently to accompany paralysis. There is a conflict here between physiology and pathology which those who insist upon the non-inflammatory character of sciatica will do well to explain.

Again, it is written that inflammatory symptoms are wanting in idiopathic neuralgia; but in typical cases of subacute and chronic neuritis there are scarcely ever marked signs of active inflammation. Indeed, so insidious are the changes in certain forms of neuritis, that some have been led to doubt whether the condition is one of inflammation and not one of degeneration—a pathological process to which the nervous tissue is everywhere particularly liable.

Many authorities assert that at the height of a paroxysm of sciatica there are vomiting, anorexia, mild fever, constipation, high-colored saccharine urine, and delirium. They reason that these symptoms are the results of the general irritation caused by the intolerable pain. Mental irritation has, doubtless, a great deal to do with them, but it looks very much as though some of the symptoms, such as the pyrexia, constipation, and high-colored urine were due to an inflammatory process. It is no argument in favor of the neuralgic character of sciatica to say that febrile symptoms are usually absent, and the health but little impaired; for in nearly all cases of subacute and chronic interstitial neuritis there is little or no fever, and but slight, if any, impairment of the general health.

Most writers on the subject assert that wasting of the muscles in sciatica is due simply to their inactivity. Fagge notes that Anstie found the faradic excitability of the gastrocnemius much diminished in one case, and then justly observes, without apparently seeing the full force of his own observation, that "it is a mistake to suppose, with some writers, that the loss of power depends merely upon disuse of the muscles." So decided a symptom would have led almost any neurologist of the present day to infer an organic lesion of the nerve or the central origin of the disease, whether of the degenerative or inflammatory type, and the existence of such a lesion would have removed the disease from among the true neuralgias.

In neuritis the electrical reactions, myotatic phenomena, and trophic symptoms are the most positive and easily explained signs of the disease. The gradual destruction of the nerve must obviously result in a loss of reflex action, because of the break that is thus produced in the reflex arc. Various trophic disturbances, such as muscular atrophy, herpes, excessive perspiration, and effusions into the joints, are caused by the separation of the trophic and vasomotor centres of the cord from the parts innervated by the affected nerve. The explanation of the electrical phenomena, namely, diminution of faradic and increase of galvanic irritability, rests more upon theoretical grounds than does the explanation of most of the trophic symptoms; nevertheless, the fact that the reaction of degeneration is one of the most reliable evidences of the destruction of nerve-fibres remains still uncontested.

How are we to explain the formidable array of trophic symptoms attributed in most of the text-books to sciatic neuralgia, a disease in which it is not supposed that there are any histological changes, but only a functional change? Indeed, it seems easier to believe, as some have already been inclined to do, notably Vulpian, Anstie, Clifford Allbutt, and Vanlair, that neuralgia is often not a disease of the nerve itself, though localized in the nerve, but rather an affection of the central nerve-cells. It is certainly more rational to believe this than that a mere bundle of motor and sensory fibres which physiology teaches us are alike, can, without any other lesion than a mere perversion of function, give rise to a host of trophic symptoms of the most varied kind.

In simple neuritis posture is at times almost as pathognomonic as is pain upon movement. In true neuralgia posture usually affords no more relief than does simple movement cause increased pain. The faulty attitude of the body in sciatica is an old and well-recognized symptom. Sometimes the patient leans toward the painful side, sometimes away from it, but always in a direction to modify the intensity of the pain. Babinski[1] has presented some admirable illustrations of this posture-symptom in sciatica. In the latter disease the inclination of the body is toward the healthy side, while the foot of the affected limb rests flat upon the ground. By this manœuvre the nerve is probably lifted away from certain prominences in the pelvis against which it usually lies, but it is difficult to offer a completely satisfactory explanation in view of the two cases reported by Bouchard, in which the inclination of the body was toward the painful side. At all events, the fact remains that the assumption of posture is more strongly indicative of neuritis than of simple neuralgia.

Neuralgia of other nerves develops under very different conditions from those under which neural-

[1] Archives de Neurologie, January, 1888.

gia of the sciatic usually occurs. Furthermore, in true neuralgia the pain is spontaneous, generally sharp from the onset, and is felt at other times in other nerves. The victims of true idiopathic neuralgia of the sciatic nerve are apt to have at times migraine, neuralgia of some of the cranial nerves and of the viscera. These neuralgic attacks are remarkably disposed to become periodic. The majority of the cases of sciatica, however, occur after some cause or under some condition of the general health that is liable to give rise to inflammation.

If the pain of sciatica is transferred to any other part of the body, it is usually to the corresponding nerve of the opposite side. This one of the peculiarities of neuritis, and is probably due to a central irritation at the point where the two nerves approximate each other both anatomically and functionally. Headaches and visceral pains are very infrequent in patients suffering from sciatica if the disease is primary and not due to a mechanical cause, such as a tumor, constipation, or pregnancy.

In the treatment of sciatica so many different plans have been tried and the average results have been so unsatisfactory that one would almost be inclined to imagine that the disease is incurable or that its nature is not clearly recognized. Subacute and chronic neuritis are proverbially hard to cure. In the management of sciatica the methods that afford the greatest success are not only different in many respects from those employed in the treatment of other neuralgias, but they are identical with those that prove most efficacious in the management of inflammation. Counter-irritation and the actual cautery, the internal administration of vasomotor sedatives, and the free use of cathartics, diuretics, and diaphoretics act more favorably in sciatica than in neuralgia of the other nerves. Narcotics and sensory depressants relieve the pains of sciatica as they do all other kinds of pains, and for that reason are commendable; but they do not cure the disease so frequently as they do idiopathic neuralgias of the cranial and intercostal nerves.

According to Pliny,[1] the victims of sciatica in his day had their pains mitigated by the soft tones of the flute. From this ancient musical method to the modern hypnotic is not so wide a leap as would at first appear. It is a well-observed fact that pain may become a habit which often needs only moral and mental treatment for its relief. It is then like certain forms of habit-chorea. The pains of sciatica are experienced because the patient retains a vivid recollection of a past attack and fears a repetition of the same. In such cases, and they are usually long-standing ones, electricity, baths, moderate exercise, general hygienic and mental treatment will do much toward effecting a cure.

But these cases are not the majority. The larger number of sciaticas seem to be benefited by therapeutic measures which rational medicine would naturally suggest were the disease recognized as inflammatory. Drugs which control the inflammatory process as well as paralyze the sensibility, like antipyrine, aconite, and belladonna, are found to be the most useful in sciatica, while simple alteratives and nerve anodynes, such as the chloride of ammonium, menthol, arsenic, and iron, give the best results in the prolonged treatment of cranial neuralgias.

Nerve-stretching is sometimes a most gratifying therapeutic resource. In old cases of neuritis it doubtless acts by breaking up adhesions and restoring the circulation; in simple neuralgia, however, in which there are no perceptible organic lesions, it is difficult to explain its *modus medendi*.

When we thus consider the causes, symptoms, and therapeutics of sciatica, and compare them with the causes, symptoms, and therapeutics of neuritis, we are almost compelled to believe that the former is only a variety of the latter affection. When in so many respects two diseases are so similar, and when nothing is known of the pathology of one while the pathology of the other is a perfectly familiar picture, it is safe to conclude that, with possibly the rarest exceptions, the pathology is the same in each. It is easier to prove a rational hypothesis than one which is based on nothing better than imagination. We are totally ignorant of the pathology of neuralgia, and up to the present time all explanations in regard to it have been but little better than guesses. We do know a great deal, however, about the pathology of neuritis, and also how the disease gives rise to the particular set of symptoms which usually accompany this affection. The broad meaning of the term neuralgia—covering, as it does, so many different conditions, of which pain alone is the preeminent symptom—hinders not a little that close scientific accuracy which is so desirable in nosology and so necessary to the continued progress of knowledge. For the present, at least, we may assert that all appearances warrant the advanced conclusion that sciatica is usually a neuritis of the sciatic nerve. If this assumption be not true its error will be more quickly discovered, than if all sorts of painful conditions of the sciatic nerve are regarded as neuralgias of which there is no pathology known to modern medicine.

1938 NORTH BROAD STREET, PHILADELPHIA.

[1] Hist. Nat., lib. xxviii.

DR. L. WEBSTER FOX has just been appointed ophthalmic expert to the Board of Pension Examiners of the Philadelphia district.

CASES OF VERTEBRAL DISEASE AND OF FIBROID AND CYSTIC TUMORS.[1]

BY W. M. HARSHA, M.D.,
OF CHICAGO, ILL.

Two cases of vertebral disease.—The first two cases which I wish to report are so nearly alike that they may for the most part be considered together. They are cases of vertebral disease, supposed to be of tubercular character. Both are males, aged twenty-seven and twenty-eight years, respectively, of tubercular family history and lymphatic temperament. Each contracted the disease while occupied at office-work, one sitting at a desk in a strained position, the other standing at a high desk in a post-office. In each case the disease had existed for some months before the patients came to Chicago for treatment, and each had been treated for rheumatism, lumbago and kindred troubles.

The first case had a history of periostitis of the tibia, with exfoliation of the bone, probably tubercular, ten years before. When he came under the care of my associate, Dr. Stillians, and myself, the patient's temperature varied from normal to 101°. He had stiffness of the back in the lumbar region, and some pain radiating from this region to the lower part of the abdomen and front of the thighs. There was tenderness over the spinous processes of the upper lumbar vertebræ on percussion or pressure. Irritability of the bladder was another symptom, micturition occurring with more than usual frequency. There was difficulty in stooping and in going down stairs, the patient partly supporting himself by the railing. He also supported himself while in a sitting posture, by pressing on the thighs and hips with his hands. All the symptoms were aggravated by exercise, and there was difficulty in lying in any position other than on the back. There was no deformity, although slight induration could be detected along the sides of the spinous processes. Owing to the direction of the normal curve at this point, the convexity being anterior, we should expect less deformity than in similar disease of the dorsal vertebra; and in adults degeneration of bone takes place more slowly than in children, in whom this disease is most frequently encountered.

A diagnosis of vertebral disease was made by Dr. Stillians and myself, after repeated examinations. Professor William E. Quine, of the College of Physicians and Surgeons, and Professor Daniel R. Brower, of Rush Medical College, were afterward consultants in the case, and the diagnosis was confirmed, although there was some discussion as to the presence of a chronic inflammation of the meninges of the cord at this point, instead of vertebral disease. The differentiation from rheumatism was based on the long duration without the occurrence of other rheumatic symptoms, and on the strictly localized tenderness; and the diagnosis was further corroborated by the family history and previous periostitis.

The treatment was what any surgeon would have adopted, namely, rest, alteratives, tonics, and counter-irritants. The means adopted to procure absolute mechanical rest in this case was recumbency in bed. The patient was very anxious to recover, and gave us intelligent coöperation. Improvement in the symptoms, though not rapid, was appreciable within a few weeks. The fever subsided first, the irritability of the bladder yielding more slowly. The patient continued to have a good appetite, and increased in weight; the tenderness over the spine gradually diminished, and the pains about the lower part of the abdomen and thighs disappeared. After four months in bed, the patient was allowed to walk about with the aid of crutches and a corset-brace. The brace was of a kind in frequent use in cases of vertebral disease, consisting of a firm, well-padded waistband of steel, two steel supports fitted to the curve of the back, with attached shoulder-straps to counteract the tendency to inclination forward, and two side-stays made adjustable to different heights, to support the shoulders. Fitting inside, and attached to the upright stays, is a corset stiffened with whalebone, which serves to secure the body more firmly. The patient has returned to his home in Dakota and resumed his business. He still wears the brace, and continues to grow stronger.

The second case, some of the features of which have been mentioned, presented a similar history, the spinal tenderness occurring in the dorsal region, where there was also some degree of prominence or projection scarcely amounting to deformity. The natural curve of the spine at the seventh, eighth, and ninth dorsal vertebræ renders a very slight projection noticeable.

The symptoms differed from those of the first case in accordance with the different location of the diseases. There were pains of a neuralgic character in each side, slight cough, dyspnœa at times, and a feeling that a "full breath could not be taken." There was difficulty in going down stairs, and in lying in any position except on the back. As this patient was of more active habits than the first case, and for some time had been accustomed to out-of door life, it was thought best to permit him to go about cautiously with a plaster-of-Paris jacket on. He was impressed as much as possible with the importance of rest, but it was difficult for him to grasp the full significance of the term. His improvement has accordingly been more slow and interrupted. He seemed to be improved by cautious partial suspension, which was practised by means of Sayre's apparatus two or three times each week. He received the same general treatment as the first case. After two months the plaster-of-Paris jacket was replaced by a brace similar to that already described.

The improvement has been gradual. The tenderness over the spine and the neuralgic pains have disappeared, although they returned two or three times, as one would expect in a case not having the most watchful care as to exercise and exposure. He can now lie in any position in bed, go up and down stairs with ease, "carries" himself in a natural manner, and expects to return to his home in Texas very soon.

Among the interesting features of these two cases

[1] Read at the fifteenth semi-annual meeting of the District Medical Society of Central Illinois, at Decatur, October 28, 1890.

are their exceedingly chronic nature and the absence of deformity in one and almost an absence in the other. There was no history of injury in either case, but positions that taxed the spinal column caused fatigue.

Hilton cites a case which he attributes to fatigue from sitting on a seat at school. He states his belief "that the majority of the cases of primary disease of the spine in children, and almost all those in adults, are the results of exercise persevered in after fatigue—that is, after muscular exhaustion, or of accident, unacknowledged or overlooked." At the time that Hilton wrote it had not been definitely settled that a slight injury causing congestion or effusion is even more likely to determine a tubercular deposit in those so predisposed, than is a more serious lesion, such as fracture. He believed that the weakening or congestion of the part determined the inflammation, but the specific nature of the lesion had not been demonstrated.

The existence of tubercle in the cases I have reported is not demonstrable, but from our knowledge that such diseases are usually tuberculous, it seems probable. The greatest importance attaches to an early diagnosis in such cases, and a good deal of obscurity often surrounds them. If deformity exists, the diagnosis is easy; but although a cure is often effected after deformity has occurred, it is less certain, requires more time, and in growing children, in whom vertebral disease is most common, the angular projection is likely to increase before the health is restored.

In obscure cases pains referred to the stomach, abdomen, or other parts corresponding to the distribution of the spinal nerves, should be traced to their source. The decubitus and the carriage of the patient should be carefully observed. An apparent lateral distortion is sometimes noticed before angular projection is appreciable. A cough persisting without corresponding pulmonary conditions should excite suspicion. I remember the case of an adult which ended fatally, that came to me from the third physician by whom he had been treated. He had a deformity and was partially paralyzed, but had not been treated for anything except "lung trouble," so far as I could learn.

I saw another case in an adult soon after this at about the same stage of the disease. A diagnosis had been made, but at what time is unknown. The patient dragged one foot in walking, due to involvement of the cord. The brace on which the main reliance in treatment was placed gave very imperfect support. This patient, who died soon afterward, should have been kept in bed until his symptoms improved, or until a brace could be so adjusted as to secure fixation of the spine in a proper position.

Not all cases can be treated alike. Some patients cannot bear confinement in bed, and in such mechanical support is necessary. In some cases suspension may aid in relieving pressure and preventing deformity, while in others, in which the disease is inactive, a disturbance of latent or encapsulated tubercles may be caused by suspension, and degeneration become active.

Fibroid and cystic tumors.—I have two specimens of tumor, one of which is an example of the fibrous, the other of the cystic, variety.[1] The fibroid, which I removed from the breast of a married woman, aged twenty-two years, had been growing about two years, and was somewhat troublesome on account of the pressure made on it by the clothing.

The cyst was also of two years' growth. It was of the synovial variety, and was attached to the semimembranosus tendon, a part of the inner hamstring, from which it developed. It had become inflamed several times from bruises, and then was so sore as to interfere seriously with locomotion. Three weeks before its removal it had been accidentally injured and hæmorrhage had occurred within and around it, infiltrating the fasciæ and producing so much swelling as to obscure somewhat the form and extent of the cyst. The whole of the cyst was removed, and, on account of the extravasation, the wound was left open and packed with antiseptic gauze. The patient returned to his home in two weeks.

Natural bursæ are found in this region and sometimes connect with the knee-joint, but when they become cystic the communication is cut off. The cyst contained grumous blood with fibrinous semisolid portions, usually described as melon-seed bodies.

In this locality such tumors presenting in the popliteal space, and lying close to the arteries, may, by their pulsating character, be mistaken for aneurism; but by pushing the cyst aside, the pulsation disappears and a diagnosis is readily made.

58 State Street.

MEDICAL PROGRESS.

Treatment of Valvular Disease of the Heart.—In a recent address before the Hunterian Society, Dr. P. H. Pye-Smith (*British Medical Journal*, December 20, 1890) gave the following excellent summary of the treatment of valvular disease of the heart:

After referring to the value of digitalis, especially when given with squill and black oxide of mercury in pill-form, he said that strophanthus is often a useful substitute after the long-continued use of digitalis. In his experience strophanthus has given the best results in the treatment of mitral incompetence in children. Convallaria has a very similar, though weaker, action, and is better as a diuretic than as a direct cardiac tonic.

In aortic valvular disease, uncomplicated by dropsy or venous congestion, digitalis is frequently uncertain

[1] The specimens were shown to the members of the Society.

and sometimes dangerous. Iron when well borne, strychnine, and, in many cases, arsenic, are valuable; but often the most relief is afforded by careful attention to the diet, in order to insure perfect digestion and the avoidance of flatulence. The author has been disappointed in the effects of belladonna on aortic valvular disease. When there are pain, headache, and symptoms resembling those of aortic aneurism, or attacks resembling angina pectoris, nitroglycerin and nitrite of amyl are extremely valuable remedies; but in many cases the application of leeches over the sternum, or small and repeated bleedings from the arm, are more efficient than any drugs. Ether, particularly in the form of Hoffmann's anodyne, strychnine and aromatic spirit of ammonia, are very useful in the cardiac dyspnœa and distress which accompany most cases of aortic disease.

In advanced cases of mitral disease with anasarca, opium is usually contra-indicated. But in disease of the aortic valves opium, in the form of laudanum or Dover's powder, may frequently be given at night with great relief and no bad effects. In such cases the opium should be given by the mouth rather than hypodermically. Potassium bromide and chloral often produce unpleasant effects; and in cases of restlessness and discomfort, tincture of hyoscyamus, given in hot brandy and water, is useful.

For the severe headache which often accompanies cardiac disease, antipyrine is sometimes given, but is dangerous and uncertain. Paraldehyde has been much used to secure sleep, but it often fails. Chloralamid, given in twenty-grain doses, frequently acts extremely well, and the author has seen no ill-effects from it, except dermatitis in one case. Sulphonal has also proved useful in his experience.

Another important point in the treatment of cardiac disease is the proper employment of venesection. In cases of aortic disease, when the pain and other symptoms resemble aortic aneurism, the abstraction of from four to six ounces of blood is sometimes very effectual, but less frequently than in cases of aneurism. When the right heart is distended, the whole venous system engorged, the skin cyanotic, and the pulse small, weak, and fluttering, moderate bleeding will sometimes give relief, but is seldom of lasting benefit.

Referring to Oertel's treatment of heart-disease by regulated gymnastics, Dr. Pye-Smith said that to him it did not seem to have either physiology or experience in its favor. Cardiac gymnastics are already provided for by the necessities of the circulation, and there is no fear of the heart being too idle, but, on the other hand, great fear of its being taxed beyond its strength.

Guermonprez's Method of Reducing Backward Dislocation of the Femur.—Dr. CATOIR describes Guermonprez's method of reducing backward dislocations of the femur as follows:

The pelvis is fixed by the left hand of the operator placed upon the iliac spine, his right hand then grasps the patient's leg, the knee being in a position of extreme flexion, and forcibly flexes the slightly-abducted thigh until its anterior surface rests upon the abdomen. To-and-fro movements of inward and outward rotation are now executed until the head of the femur rests against the acetabulum, when direct pressure, either by the hands of an assistant or the knee of the operator, completes the reduction. During the last part of the manipulations the extreme flexion of the thigh upon the abdomen should be slightly relaxed. The method is most useful in old cases, and particularly when the operator is without assistance. Guermonprez employed it [presumably successfully] under anæsthesia in an iliac luxation of eight weeks' duration, having on the previous day rendered the head of the femur mobile by means of flexion.—*Annals of Surgery*, December, 1890.

The Symptoms and Treatment of Diabetic Coma.—SCHMITZ (*Berliner klinische Wochenschrift*) recognizes two distinct varieties of diabetic coma. The first is due to weakness of the heart, caused by the effect of the sugar in the blood upon the muscular fibres. In such cases the face is cyanotic, the respiration rapid, the pulse slow and small, becoming rapid and irregular on exertion, the cardiac impulse is scarcely perceptible, and the first sound almost inaudible. In order to prevent coma in such cases everything that excites the heart must be avoided and exercise must be limited. All potassium salts including the bromide, salicin and its compounds, antipyrine, antifebrin, and hot baths are contraindicated. Narcotics should not be used unless they are absolutely necessary. The treatment of the diabetes must not be neglected. If the symptoms are very marked the patient must not be allowed to rise from the recumbent position for any purpose. Black coffee is the best stimulant to give by the mouth, and if it causes vomiting musk or camphor may be given hypodermically. Schmitz makes it a rule not to permit the patient to rise until the first sound of the heart becomes clear.

The second form of diabetic coma the author considers an acute self-infection, incorrectly called acetonæmia. This condition is preceded by symptoms mistaken for indigestion, namely, lack of appetite, eructations of offensive gases, sleepiness, etc. Sleep is unrefreshing; there is usually constipation, sometimes diarrhœa, and the tongue is dry and coated. These symptoms continue for about two days, when the patient becomes restless and drowsy; the respirations increase to 45, the pulse to 130 or more, and the temperature is somewhat elevated. The patient can be aroused from his sleepy condition by a loud call, but immediately relapses into semi-stupor. He complains of thirst and of pain in the upper part of the abdomen, which, however, is not tender. The pain may be paroxysmal and intensely severe. After violent efforts vomiting of greenish fluid occurs, and the pain is somewhat relieved. A physical examination of the lungs reveals nothing abnormal. The pupils are usually contracted and do not respond to light. Later, violent tonic and clonic spasms occur, and death in coma follows.

In the treatment of this form Schmidt recommends the administration of one or two tablespoonfuls of castor oil, whether the bowels are constipated or not. The purgative is given in order to remove the products of decomposition in the bowels, these products being the cause of the symptoms. After purgation the symptoms rapidly disappear. Of eight cases of this variety in the author's experience, four not treated with the oil died, and the remaining, treated with it, speedily recovered.—*Medical Chronicle*, November, 1890.

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SATURDAY, JANUARY 10, 1891.

A STATE BOARD OF MEDICAL EXAMINERS.

IT needs little argument to prove that the productive energy and wealth of a community depend directly upon the health of its individual members. Any factor, therefore, which prevents the occurrence of disease or which shortens the duration of disability from unavoidable disease or injury conduces to the welfare and progress of the State. It cannot be gainsaid that an essential in every well-regulated community is the assurance to the citizen that the person to whom he intrusts himself for medical treatment shall have an average knowledge of medical science. The principle involved is the same as that which has led governments to insist upon licences being obtained by pilots, steamship engineers, apothecaries, and others, before they assume to offer their services to the public.

The Act to establish a State Board of Medical Examiners and Licensers, which is published in this issue of THE MEDICAL NEWS, has this object in view, and ought to receive the earnest support of every intelligent reader.

The amount of suffering due to unnecessarily prolonged illness due to ignorant medical attendance, and the cost to the State of supporting in poor-houses disabled artizans whom early intelligent treatment would have made self-supporting, is scarcely realized by physicians themselves, and is an unknown quantity to the average layman. Unfortunately, too, it is usually those least able to bear an enforced abstinence from remunerative work who fall into the hands of uneducated or imperfectly-educated practitioners of medicine.

The purchase of bogus diplomas, the ignorance of many graduates coming from low-grade or poorly-equipped schools, and the expulsion of such ignorant practitioners from eighteen other States having boards of examiners, have flooded Pennsylvania with men totally unfit to have the care of the sick or injured. The necessity for a law requiring all *newcomers* to show evidence of fair medical knowledge before settling for practice in Pennsylvania has thus become imperative.

Official reports show that in the United States there have existed at least eighteen colleges from which diplomas could be purchased without the purchaser having studied medicine. How many possessors of these bogus diplomas are now posing as competent physicians is unknown. It is known that there have registered as physicians in Pennsylvania since the present defective registration law was enacted in 1881, at least 932 persons who have no diploma. In Allegheny County alone there have been about 100 such cases, and nearly as many in Philadelphia County. Nearly ten per cent. of all registered practitioners in Pennsylvania are without that slight evidence of medical education which even the poorest diploma gives. From official sources the fact is apparent that at least 222 persons have registered in Pennsylvania who possess diplomas from schools known to have been engaged in selling bogus diplomas.

The present law for the registration of physicians is notoriously imperfect in its results, so far as protecting the public from incompetence is concerned. This is due to the obscure wording of the law, which renders more than one interpretation possible in important sections, and to the circumstance that it places the carrying out of its provisions upon clerks in the offices of the Prothonotaries. These persons often are unfamiliar with the appearance of medical diplomas, frequently have no knowledge of the existence or non-existence of schools purporting to have issued any particular document, and are frequently being succeeded by other clerks even less familiar with such matters than themselves.

It is more than probable that these and other causes have permitted illegal registration in every

county of the State. Wherever careful inspection of the Prothonotary's records has been made by competent observers, numerous examples of improper registration have been found. In a series of eight counties, none of which contained large cities, forty-nine palpable instances of such illegality were recently found. In at least one populous centre this irregularity is known to be even worse.

The bill as now drafted, and which will be presented to the Legislature at an early date, is one fair in all its details. The candidate for license to practise must be a graduate, his paper is examined by those to whom his identity is unknown, his examiners are unconnected with medical schools, and he can select the system of materia medica and therapeutics in which he wishes to be examined.

The Executive, who appoints the Board, is untrammelled, except that he must give representation to at least nine different counties. Hence, none of those who believe in special systems of medical practice need fear exclusion from representation on the Board.

The recognition of diplomas and the determination of the physician's fitness to practise are now controlled by similar boards in States aggregating a population of about 20,000,000. The satisfactory result of such control indicates that Pennsylvania will be benefited by similar legislative action, and especially so, as this Commonwealth is now one of the States to which the ignorant and bogus practitioner gravitates because excluded from practising in those States whose people are protected by effective laws.

Let Pennsylvania do as has been done by North Carolina, South Carolina, Alabama, Illinois, West Virginia, Virginia, Colorado, Mississippi, Minnesota, Iowa, Missouri, New York, Montana, New Jersey, California, Florida, Tennessee, Oregon, and Canada, and her tax rate for the maintenance of almshouses can be diminished.

In the States of Maine and Maryland similar Acts have been passed by the Legislatures, but in each instance vetoed by the Governor. It is probable, however, that these States will, at an early day, again pass such laws, and join the number which believe that incompetent and ignorant physicians are a menace to the welfare of the State.

THE NEW SURGEON-GENERAL.

THE appointment, by the President, of Colonel Charles Sutherland to the position of Surgeon-General of the United States Army, with the rank of Brigadier-General, cannot fail to be well received by many of the profession, and by the branch of the service of which he is a member. By the rule of seniority, Dr. Sutherland had a claim to the appointment, and we believe that this fact had something to do, as it should, with the President's decision. While THE MEDICAL NEWS favored the cause of Dr. Billings, it cannot but believe that the medical department of the Army will be well cared for, since the present chief has had so much experience as to render his capability of dealing with his new duties undoubted. Dr. Sutherland entered the service in 1852, being appointed from Pennsylvania, and has a record untarnished both in professional and Army life.

REVIEWS.

MANUAL OF WEIGHTS AND MEASURES, WITH RULES AND TABLES. By OSCAR OLDBERG. Third edition, revised. Chicago: W. T. Keener, 1890.

To those who are already familiar with this useful little book it is unnecessary to speak well of it, and to those who are not fortunate enough to possess it we would earnestly recommend its purchase, particularly if they are engaged in pursuits which bring them in contact with the metric system or with accurate measurements. The very large number of books intended to provide for similar wants may, perhaps, be useful, but Prof. Oldberg has surpassed them, as much that is usually uninteresting is presented in so clear a manner that one cannot fail to understand what he reads on a single reading, while the tables are models of completeness. We believe that, if this book could be put into the hands of many medical students, it would not only be of great service to them during their college life, but be a valuable hand-book for reference in after-practice.

THE MICROÖRGANISMS OF THE HUMAN MOUTH, AND THE LOCAL AND GENERAL DISEASES WHICH ARE CAUSED BY THEM. By WILLOUGHBY D. MILLER, D.D.S., M.D. Illustrated. Philadelphia: The S. S. White Dental Manufacturing Co., 1890.

DR. MILLER'S book is not only interesting because of the studies and results which it details, but also because the author is at present one of the Professors in the University of Berlin, and a graduate of an American dental school, namely, the Dental Department of the University of Pennsylvania.

The volume is rendered particularly attractive to those who are interested not only in diseases of the mouth, but in bacteriology in general by reason of the very clear and well-executed cuts which are found on almost every page, while in addition to these will be found mounted photographs of the microörganisms which have been studied.

It has been said by some dentists that they fail to understand why the following of their profession did not

place them upon the high professional and social standing attained by doctors of medicine, and the real reason lies in the failure of most of them to do any original work save that which has a direct pecuniary reward. This book is, therefore, particularly refreshing, as showing that at least some members of the dental profession are awake to the necessity of careful scientific research and observation. Dr. Miller's book should be in the hands of every dental and oral surgeon, and if it is not successful, the author can rest assured that the fault does not lie with himself, but with his professional brethren.

Disorders of the Male Sexual Organs. By Samuel W. Gross, A.M., M.D., LL.D. Fourth edition. Revised by F. R. Sturgis, M.D. Philadelphia: Lea Brothers & Co., 1890.

Dr. Gross's book upon disorders of the male sexual organs is so well known to most of the profession, both in this country and abroad, that it is hardly necessary to do more than make a note of the fact that the fourth edition has appeared under the editorial care of Dr. Sturgis. Everyone who knows Dr. Sturgis's writings will at once recognize the fact that the publishers have done well in obtaining so thoroughly qualified an editor for so successful a book, and it is no reflection upon its author when we add that Dr. Sturgis's touch has improved the volume.

Progressive Exercises in Medical Chemistry. By Henry Leffmann, M.D., Ph.D., and William Adam, M.A., Ph.D. Philadelphia: P. Blakiston, Son & Co., 1890.

This little book, which is bound at the upper margin instead of upon the left-hand side, in order to make it more convenient for the table of the analytical chemist, will, no doubt, prove valuable to those professional men who desire to carry out certain experiments or tests without recourse to books in which information is imparted in a more diffuse manner.

Dr. Leffmann has so frequently shown that he is capable of proving the analyses of which he teaches, that we have full confidence in his work, and recommend this book to any members of the profession who are interested in such matters.

A Latin Grammar of Pharmacy and Medicine. By D. H. Robinson, Ph.D., and L. E. Sayre, Ph.G. Philadelphia: P. Blakiston, Son & Co., 1890.

The object of this useful book is a very laudable one, namely, to improve, if possible, the Latin used by both physicians and druggists, chiefly in the prescribing of drugs. While it is true that many of the profession find it unnecessary to remember the genitive endings of words used in medicine, because of the customary abbreviations in prescription-writing, there are others who frequently desire to write their directions to the druggist in Latin in order that the patient may not learn of facts about which it is often necessary for him to remain in ignorance. We hope that the book will prove a success, and by its general employment in both pharmaceutical and medical schools improve the knowledge of Latin in both professions.

Contribution a l'Étude des Psorospermoses Cutanées et de certaines Formes de Cancer.
Maladie de la Peau dite Maladie de Paget. By Louis Wickham. Paris: G. Masson, 1890.

This capital monograph is composed of three parts. The first is a clinical study based upon the literature of Paget's Disease of the Nipple, containing especially full quotations from American authors, and a series of previously-unpublished observations. The second part deals with the anatomico-pathological nature of the malady, and is rich in liberal extracts from published researches, containing as well a number of new cases and a report of the histological examinations. The reader is here introduced to the remarkable observations of Darier on the forms of psorospermiæ seen in this disease. The final section includes a well-digested account of the pathogenesis of the affection, and the conclusions are reached that this malady should be considered as a special disease of the superficial epithelium, consisting of various grades of cellular proliferation; that it is a chronic disorder of the skin, due to parasites of the order of psorospermiæ; and that these parasites seem to have a direct influence upon the future development of epithelioma.

If these facts are accepted, and as microscopical examination of the small crusts from the diseased nipple affords an excellent and rapid method of diagnosis depending upon either the presence or absence of the parasitic sporozoa, the author argues that the disease of Paget in the first two degrees of the lesion should be treated, not by radical extirpation, but by the application of anti-parasitic substances. The curability of the affection in the earlier periods of its existence is readily conceived from this theory of its pathogenesis. Full directions for treatment according to the rules formulated by Darier are given, with a complete list of the most serviceable applications. Two excellent chromo-lithographs of "this disease of the skin, called the disease of Paget," and a number of beautifully-executed plates illustrating its histology and the habitat of the psorospermiæ accompany the volume. This excellent research commends itself alike to pathologists, dermatologists, and practical surgeons.

Saunders' Question Compends: Essentials of Minor Surgery and Bandaging. With an Appendix on Venereal Diseases. Illustrated. By Edward Martin, M.D. Philadelphia: W. B. Saunders, 1890.

This is one of the best condensations of the subjects of which it treats that has been placed before the profession for a long time. Most of these books make the mistake of detailing at unnecessary length all the possible forms of bandages which can be applied to the human body, and leave the reader stranded upon a shore where he can find nothing that will aid him in clearing up his ideas for treatment. The cuts which are introduced, although numerous, are all of them appropriate. Most of our readers will be interested to learn that the chapter upon Genito-urinary Diseases, though necessarily short, is sufficiently complete to make them feel thoroughly acquainted with the most advanced views on the subject, after having read each sentence carefully.

The publisher has been unusually fortunate, we under-

stand, in most of the numbers of this series, and we shall be surprised if the twelfth volume does not meet with more than the success obtained by the others.

SOCIETY PROCEEDINGS.

MONTREAL MEDICO-CHIRURGICAL SOCIETY.

Stated Meetings, October 24, and November 7, 1890.

THE PRESIDENT, F. J. SHEPHERD, M.D., IN THE CHAIR.

DR. W. A. MOLSON showed the stomach of an old woman. The organ was pyriform, the size of the closed fist; its walls were half an inch thick, and its capacity only four ounces. Microscopical examination proved it to be carcinomatous. The physical signs during life were insufficient to base a diagnosis upon.

Dr. Molson also showed a man aged thirty years with ankylosis of the spinal vertebræ. His neck was curved forward, but his head moved freely on the axis. This condition had been developing for three years. The muscles of the back were not wasted, but were abnormally firm. In the absence of a history of venereal disease the possibility of malingering had arisen; under ether, however, the vertebræ from the axis to the sacrum were found immovable. The man had had a slight attack of inflammatory rheumatism three years previously.

DR. JAMES BELL showed specimens from a case of malignant disease of the tongue. The organ and the floor of the mouth had been removed by an incision under the chin. The man died of gangrene of the lungs forty days after the operation.

DR. WILLIAM GARDNER showed a specimen of tubal pregnancy the size of a hen's egg. The fœtus was not found, but the villi made the diagnosis positive. The patient was a married woman, twenty-six years of age. The rupture occurred when gestation had advanced about two months and a half. On opening the abdomen a large quantity of effused blood was found. The patient made a good recovery. This is the second case observed in the practice of Dr. Gurd, and the third operation by Dr. Gardner, two of which were successful.

Meeting of November 7, 1890.

DR. JOHNSTON showed, for Dr. Molson, specimens from a case of general syphilitic infection. The specimens were portions of the tibia and calvarium, showing much thickening and induration; a thickened plaque from the pharnyx; and a rectal ulcer. The patient, a man of sixty years, had had perityphlitis and diarrhœa for three years. A peculiarity of the case was that the rectum was on the right side of the pelvis.

DR. H. L. REDDY reported the case of a woman of twenty years, who died suddenly, after a few days' illness which did not seem dangerous. A small, sharply-defined ulcer was found in the posterior wall of the stomach. Two years ago she had been treated for symptoms pointing to gastric ulcer, but had apparently recovered, and subsequently gave birth to a child and acted as wet-nurse.

DR. F. R. ENGLAND showed a patient who had a pedunculated tumor the size of a goose-egg and resembling a scrotum, springing from the perineum. Examination after removal, he said, would alone disclose its real nature.

DR. R. L. MACDONNELL related the history of a remarkable case of enlargement of the liver. The patient was a married woman aged thirty years, who had had good health until five years ago, when, after the birth of her first child, she suffered from a prolonged purulent discharge from the genitals. She has had two other children, and two miscarriages. Syphilis cannot be excluded, her husband being depraved. She has never suffered from serious digestive disturbance, nor from hæmatemesis, diarrhœa, melæna, hæmorrhoids, ascites, or jaundice. There is no appearance of ill health. The abdomen and legs are not swollen, and there are no enlarged abdominal veins. External evidences of syphilis are wanting. The margin of the liver can be felt two inches below the umbilicus, the notch between the lobes being perceptible. There is no pain on palpation. The upper border of hepatic dulness is two inches above the nipple, thus the hepatic dulness in the nipple-line is *thirteen and a half inches*. The growth of the liver has been slow and imperceptible. Examination of the urine gave no evidence of disease. The case was considered one of waxy liver, remarkable for the huge size of the organ, the hepatic dulness exceeding that of any case recorded. The waxy liver moulds itself over organs and spreads in the direction of least resistance. A liver nearly as large as this is described by Murchison. The absence of albumin in the urine weakens the diagnosis, but cases are on record of amyloid livers with normal kidneys, and moreover, kidneys may undergo degenerative changes without giving rise to albuminuria.

DR. J. A. HUTCHINSON showed a phosphatic calculus the size of a Haricot bean, which had been removed from under the tongue of a man.

Officers for the ensuing term: *President*, F. J. Shepherd, M.D.; *Vice-Presidents*, A. Proudfoot, M.D., R. L. MacDonnell, M.D.; *Secretary*, J. G. McCarthy, M.D.; *Librarian*, F. W. Campbell, M.D.; *Council*, James Bell, M.D., James Stewart, M.D., G. E. Armstrong, M.D.

CORRESPONDENCE.

CHICAGO.

(*From our Special Correspondent.*)

AT the meeting of the Illinois State Board of Health, recently held in Chicago, Dr. John H. Rauch, Secretary, presented his quarterly report, which was full of interest, and from which we will give a few extracts:

The general health in Illinois has been very good, and no disease has been particularly prevalent. Outbreaks of diphtheria have occurred in the southern and other portions of the State, but where the disease spread it was mainly owing to municipal neglect in enforcing the rules and requirements of the Board.

Scarlet fever of a mild type has been prevalent at Quincy, Monarch, Sumner, Decatur, and other places. Typhoid fever has been reported near Urbana, Clayton, Carthage, and Centralia. The outbreak near Urbana was especially virulent, in a family of eleven, nine having

died. Dr. Rauch is satisfied that if the proper sanitary precautions had been promptly taken the mortality would not have been as great.

On September 11th four persons were poisoned at Macomb by eating custard. It was supposed that the vanilla flavoring-extract was the cause, but Professor Long made an analysis of the vanilla, and found nothing deleterious in it, and is of the opinion that the cases were ptomaïne-poisoning.

Dr. Rauch dwells upon the necessity of making diphtheria a quarantinable disease at the maritime ports. While returning to the United States on one of the most popular lines of ocean steamers he found that a death had occurred in the steerage from diphtheria, and no special precautions were taken to prevent the spread of the disease. From observations made on the steamer Dr. Rauch thinks that proper care is not taken in the inspection of immigrants with reference to vaccination.

Dr. Rauch's remarks upon the prevalence of cholera in Europe and Asia, and the probabilities of its reaching this country next year have already appeared in THE MEDICAL NEWS.

Relative to the Medical Practice Act he said that at no time since the organization of the Board has there been such a rush of medical men to Chicago as during the past three months. More than two-thirds of the certificates issued were to physicians who wished to practise in Chicago. And never before in the same length of time have so many professional frauds attempted to obtain a foothold in Chicago. It is evident that the increase of population and especially the coming World's Fair are the attractions. Eleven applicants were refused licenses because they had diplomas from schools not in good standing, because their professional records had been tarnished elsewhere, or because they could not comply with the requirements of the Board. The anxiety to settle in Chicago is also manifest in the incorporation of so-called medical companies, medical associations, and dispensaries, thus taking advantage of the lax laws and attempting to evade the Medical Practice Act.

It is undoubtedly the duty of the Board to do all it can, to protect not alone the citizens of Chicago from this class of frauds, but the visitors to the World's Fair as well.

During the quarter there were received in the Secretary's office 1775 written communications—exclusive of diplomas submitted for verification, affidavits, letters of recommendation, etc.—pertaining to 124 applications for certificates entitling to practise medicine, and twelve applications from midwives. There were issued ninety-seven certificates based on diplomas of medical colleges which conform to the standard of minimum requirements; ten to graduates who were required to supplement their diplomas by evidence of proficiency in the subjects or branches omitted by their respective colleges; and six duplicates upon proof of loss or destruction of the original. Eleven applications were rejected because of inability to comply with the law. Certificates were also issued to seven midwives and licentiates; to three upon examination. Two were rejected. One itinerant license fee of $100 was refused. Letters of inquiry have been more than usually numerous from medical colleges and from boards of medical examiners with regard to the status of medical colleges.

GANGRENOUS STOMATITIS.

To the Editor of THE MEDICAL NEWS,

SIR: In your issue of November 15, 1890, there is reported by Dr. W. P. McDonnald, of Hill City, Tenn., a case of cancrum oris, or gangrenous stomatitis. I wish to put on record a similar case.

On August 10, 1890, I was called to see Anna D., aged eight years, who for six weeks previously had been suffering from typhoid fever. When I saw her she had no fever, was very much emaciated, and had not strength enough to raise her head from the pillow. The contents of the bowels and bladder were passed involuntarily. There was a purple spot on the right cheek; the circumference was hard and the centre thin and soft. There was a very offensive discharge from an ulcer on the inside of the cheek. She had been allowed to scratch this ulcer, and no regard was paid to cleaning her face and hands. Her eyes were closed, and her mother told me that they had not been opened for ten days. I washed her face and gently separated her eyelids, to find that purulent ophthalmia had destroyed both eyes. I had little hope of her recovery, but put her on stimulants, nutritious diet, and anodynes, and used a mouth-wash composed of equal parts of "Listerine" and glycerin. On the following day the left cheek became involved, and the ulceration soon extended to the inferior maxillæ on both sides. She lost several teeth with pieces of the maxillary bone. Strange to say, the patient recovered in about three weeks, but she is totally blind, her face is disfigured, and her mouth is closed by a fibrous adhesion between the cheek and lower jaw on the right side. She feeds herself through an opening made by the loss of two or three teeth on the left side. When the adhesion is broken up or cut through, she will be able to open her mouth.

J. T. GRAHAM, M.D.

WYTHEVILLE, VA.

NEWS ITEMS.

AN ACT

To Regulate the Practice of Medicine and Surgery, to establish a State Board of Medical Examiners and Licensers, to define the powers and duties of such Board, the qualifications of applicants for license, the manner of licensing, and making an appropriation for said Board.

Whereas, The safety of the public is endangered by incompetent physicians and surgeons, and due regard for public health and the preservation of human life demands that none but competent and properly-qualified physicians and surgeons shall be allowed to practise their profession;

SECTION 1. Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by authority of the same, that within one month after the passage of this Act the Governor shall appoint a State Board of Medical Examiners and Licensers consisting of nine members, three to serve for one year, three for two years, and three for three years in the first instance, and thereafter annually the Governor shall appoint three

members to serve for three years in place of those whose terms then expire. The said persons so appointed shall be graduates of some legally-chartered college or university having the power to confer medical degrees, citizens of the United States and of this Commonwealth who shall have been in the active practice of medicine or surgery for a period of not less than ten years, but no two of whom shall be residents of the same county (and none of whom shall be members of the faculty or staff of any medical school or university). Each member of the said Board shall receive a certificate of appointment from the Governor, and shall file the same within twenty days with the Prothonotary of the Court of Common Pleas of the county in which said member is registered under existing law.

SEC. 2. The said Board shall be known by the name and style of the State Board of Medical Examiners and Licensers of the Commonwealth of Pennsylvania, and shall have a common seal, and may make and adopt all necessary rules and regulations and by-laws not inconsistent with the Constitution and laws of this Commonwealth, or of the United States, and shall have power to locate and maintain an office within this State for the transaction of business. Five members of the said Board shall constitute a quorum for the transaction of business.

SEC. 3. Every appointment to fill a vacancy or vacancies in the said Board shall be for the unexpired term, and the said vacancy or vacancies shall be filled by the Governor within sixty days after the notification of the same by the Board, and he shall have power to remove any member of said Board for criminal, scandalous, or dishonorable conduct.

SEC. 4. The said Board shall organize at Harrisburg within three months from the date of their appointment, and shall elect from its own number a President and Secretary who shall also act as Treasurer, both of whom shall hold their offices for one year, or until their successors are chosen.

SEC. 5. The members of the said Board shall each receive a salary not exceeding three hundred dollars per annum, to be paid out of the fees for examination. The Secretary and Treasurer shall receive an additional salary, to be fixed by the Board, and shall file with the President of the Board a bond in the sum of one thousand dollars, conditioned for the faithful performance of his duties. The necessary expenses of the said Board shall also be paid out of the fees, except as provided in Section 12 of this Act, and any balance remaining from the fees, after the disbursements herein specified, shall be paid into the treasury of the Commonwealth.

SEC. 6. The said Board shall examine all applicants for license to practise medicine or surgery in this Commonwealth who are properly qualified according to the provisions of Section 7 of this Act, and no one shall be excluded or rejected on account of adherence to any special system or school of practice. It shall hold two stated meetings in each year, one at Pittsburg and one at Philadelphia, respectively, and may hold special meetings at such times and places as it may deem proper. All examinations, when practicable, shall be conducted in writing, and all examination papers, together with the reports and action of the Examiners thereon, shall be preserved among the records of the said Board for a period of five years, during which time they shall remain open for inspection at the office of the said Board.

The applicants shall be examined in anatomy, physiology, chemistry, toxicology, pathology, hygiene, materia medica, and therapeutics, principles and practice of medicine, surgery, and obstetrics, and each applicant upon receiving from the Secretary of the Board an order for examination shall draw by lot a confidential number, which he or she shall place upon his or her examination paper, so that when said papers are passed upon by the Examiners the latter shall not know by what applicant said papers have been prepared, and upon each day of examination all candidates shall be given the same set of questions. Provided that any candidate for examination may elect the system of materia medica and therapeutics in which he or she shall be examined.

SEC. 7. Any person on paying twenty dollars to the Secretary of said Board, and on presenting satisfactory proof of being over twenty-one years of age, of good moral character, and of having received a sufficient preliminary education, as defined by said Board, and a diploma from some legally-incorporated medical college or university having authority to confer degrees in medicine, shall be entitled to examination by said Board, and in case of failure at any examination shall have the privilege of subsequent examinations without the payment of an additional fee. Each applicant who shall have passed a satisfactory examination shall receive from the said Board, under seal, a license to practise medicine and surgery in the Commonwealth of Pennsylvania, and the said Board may at its discretion grant licenses, without examination, to persons holding licenses from similarly-constituted boards of examiners or boards of health in other States.

SEC. 8. The Secretary shall record in a book to be kept for this purpose in the office of the said Board, the name, age, sex, residence, date, and place of examination, the examination number, the examination average on each branch, the general average, and the date of issue of license, in case such license is granted. Said book shall be open to public inspection, and on or before the last day of December of each year the said Board shall publish, or cause to be published, a list of the names and addresses of such persons as shall have received licenses from the said Board within twelve months immediately thereto preceding.

SEC. 9. After the first day of July, Anno Domini one thousand eight hundred and ninety-one, no person shall enter upon the practice of medicine or surgery in the State of Pennsylvania unless he or she has complied with the provisions of this Act, and shall have exhibited to the Prothonotary of the Court of Common Pleas of the county in which he or she desires to practise medicine or surgery, a license duly granted to him or her by the said State Board of Examiners and Licensers, whereupon he or she shall be entitled, upon payment of one dollar, to be duly registered in the office of the Prothonotary of the Court of Common Pleas in said county, and any person violating any of the provisions of this Act shall be guilty of a misdemeanor, and upon conviction thereof in the Court of Quarter Sessions of the county where the offence shall have been committed, shall pay a fine of not less than one hundred dollars nor more

than five hundred dollars for each offence, one-half of which fine shall be paid to the prosecutor.

SEC. 10. Nothing in this Act shall apply to commissioned medical officers of the United States Army or Navy, or of the United States Marin-eHospital Service, nor to any member of the house or resident staff of any legally-chartered medical college or university or hospital during his term of service therein, nor physicians of other States meeting duly registered physicians in this State in consultation, nor to those practising dentistry exclusively. And nothing in this Act shall be construed to prohibit the practice of medicine and surgery within this Commonwealth by any practitioner who shall have been duly registered before the first day of July, Anno Domini one thousand eight hundred and ninety-one, according to the terms of the Act entitled "An Act to provide for the registration of all practitioners in medicine and surgery," approved the eighth day of June, Anno Domini one thousand eight hundred and eighty-one.

SEC. 11. For the purpose of this Act, the words "practise medicine or surgery" shall mean to treat, operate on, or prescribe for any physical ailment of another. But nothing in this Act shall be construed to prohibit service in cases of emergency or the domestic administration of family remedies.

SEC. 12. The sum of one thousand dollars, or so much thereof as may be necessary, is hereby appropriated to meet the necessary and legitimate expenses of the said Board for the year Anno Domini one thousand eight hundred and ninety-one.

SEC. 13. All Acts or parts of Acts of Assembly inconsistent herewith shall be and are hereby repealed.

The Medical Society of the County of New York.—This Society has awarded a prize to Dr. David Cerna, of the University of Pennsylvania, amounting to $100, for his essay upon the "Physiological Action of Hydrastis Canadensis." The essay, we understand, is a very exhaustive and careful study of the subject of which it treats.

Chair of Otology in the University of Pennsylvania.—Dr. Burton Alexander Randall, a graduate of the University of Pennsylvania in 1880, has been appointed Clinical Professor of Otology in the University to succeed Dr. George Strawbridge, who resigned some months ago on account of ill health. Dr. Randall is well known in the profession, not only because of his skill in the treatment of affections of the ear, but also by reason of his careful pathological and anatomical work in connection with this portion of the body. An abstract of a very interesting paper upon "Corrosion Methods in Studies of the Ear" appeared in *The American Journal of the Medical Sciences* for January, 1891. Dr. Randall is also the author of a volume of photographs of the ear, which are extraordinary because of their skilful execution. In addition to a very wide clinical experience in this country, Dr. Randall has had ample opportunities of becoming well versed, in the subject which he is to teach, in European clinics, and we congratulate both the University and the appointee upon his accession to the professorship.

A Medical Directory.—Mr. George Keil, of 1715 Willington Street, Philadelphia, is about to publish a medical and dental register, directory and intelligencer of the States of Pennsylvania, New Jersey, and Delaware. This directory will be presented gratis to the members of the profession, the expense being paid by the advertising which it contains. It will also contain a list of the National State Medical and Dental Organizations, the names of officers, the office-hours of all doctors and dentists, with the school and year of their graduation.

A Dispensary for the Treatment of Diseases of Women by Electricity.—A dispensary for the treatment of the diseases of women amenable to electricity has been opened at 1632 Cherry St., Philadelphia, under the charge of Drs. G. Betton Massey and Horatio R. Bigelow. Physicians are invited to bring or send suitable cases on Mondays, Wednesdays, and Fridays at 3 P. M.

To Found a New College and Hospital.—The Brooklyn Post-Graduate College and Hospital has been incorporated with the following officers: President, Dr. George R. Fowler; Secretary, Dr. Reuben. These officers, with Drs. Glentworth, Butler, and Charles Jewett, will form the Governing Council. The Board of Managers consists of Drs. West, Van Cott, Fuhs, Lennox, Browning, Price, Dayton, and Pilcher, and Mr. Wensley. The institution will provide for instruction in all departments of medicine and surgery and a dispensary will be established. The site of the buildings is not yet determined.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM DECEMBER 30, 1890, TO JANUARY 5, 1891.

By direction of the Secretary of War, the following-named medical officers will proceed, without delay, to Pine Ridge Agency, South Dakota, and report in person to the commanding general Department of the Platte, for duty in the field: HENRY S. KILBOURNE, *Captain and Assistant Surgeon;* EDWIN F. GARDNER, *Captain and Assistant Surgeon;* and EDWARD EVERTS, *Captain and Assistant Surgeon.*—Par. 9, *S. O. 304, A G. O.*, December 30, 1890.

By direction of the Secretary of War, JOHN V. LAUDERDALE, *Major and Surgeon*, now on duty at Fort Ontario, New York, will proceed, without delay, to Pine Ridge Agency, South Dakota, and report in person to Brigadier-General John Brooke, for duty in the field, and by letter to the commanding general Department of Dakota.—Par. 8, *S. O. 303, A. G. O., Washington, D. C.*, December 29, 1890.

By direction of the Secretary of War, the extension of leave of absence, on account of sickness, granted STEVENS G. COWDREY, *Major and Surgeon*, in Special Orders, No. 293, December 16, 1890, from this office, is still further extended one month, on account of sickness.—Par. 8, *S. O. 302, A. G. O., Washingcon, D. C.*, December 27, 1890.

By direction of the Secretary of War, OGDEN RAFFERTY, *First Lieutenant and Assistant Surgeon*, is relieved from duty at Fort Sam Houston, Texas, and will report in person to the commanding officer Camp Eagle Pass, Texas, for duty at that station, reporting by letter to the commanding general Department of Texas.—Par. 2, *S. O. 301, A. G. O.*, December 26, 1890.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JANUARY 3, 1891.

PICKERELL, G. MCC., *Assistant Surgeon.*—Detached from the U. S. Receiving-ship "Minnesota," and wait orders.

MCCORMICK, A. M. D., *Assistant Surgeon.*—Ordered to the U. S. Receiving-ship "Minnesota," as Dr. Pickerell's relief.

THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LVIII. SATURDAY, JANUARY 17, 1891. NO. 3.

ORIGINAL LECTURES.

ARTHRITIS DEFORMANS—CANCER OF THE LIVER.

Abstract of a
Clinical Lecture delivered at Bellevue Hospital.

BY ALFRED L. LOOMIS, M.D.,
VISITING PHYSICIAN.

GENTLEMEN: This man comes to us with a history of having been in good health until about one year ago, although for about four years past he has had wandering pains about the joints. He is a man of temperate habits, and has lived in a healthful region, but his work as a farmer and lumberman has involved some exposure to wet and inclement weather. For some time previously to very marked symptoms in his joints, he noticed creaking in them, and swelling around them at night, which disappeared before morning. His mother and brother were similarly affected. The small joints were apparently first involved, and you notice particularly that he says the disease began in the big toe, but that after a short time, the other joints became involved. He was able to continue his work until about one year ago, when he suffered from a very acute attack, in which all the joints became affected; and since that time he has been more or less crippled. I wish you to notice especially that the joints became involved *progressively*—in other words, a joint, after once becoming affected, did not get well, but became steadily worse, until finally there was complete loss of motion. At present, the wrist-joint, although somewhat swollen, is not very tender, and if I grasp it firmly and attempt to move it, there is very slight motion, and some crepitation. I want to impress upon you that one of the earliest and most constant symptoms is this crepitation in the joint, and it is highly important that you should recognize its significance, for it is only in the very early stages of this disease that we can hope to accomplish anything by treatment. During the past year, I have seen two or three persons who, after a general feeling of ill-health, without any distinct rheumatic manifestations, developed this creaking of the joints, which was followed by the characteristic changes in the joints which we find in this case.

Even at a very early period, medicines are powerless to check the progress of this disease, and hence the danger-signal should be promptly recognized, and the appropriate prophylactic measures adopted. This patient had four or five years of premonition, yet the warnings were disregarded, and his habits of life were not changed. The disease is often hereditary, and this man's family history is not at all exceptional. Arterial degeneration does not occur until very late, and in this respect the disease differs from gout. Some physicians speak of this disease as "rheumatic gout," but one might just as well speak of measly-scarlatina, for rheumatism and gout are two distinct forms of disease. Each may appear in the same individual, but not at the same time. The condition we are studying is more correctly designated as *arthritis deformans*. It does not always present the acute symptoms described by this patient, but such symptoms are often present. Cardiac complications are infrequent. As you look at this patient, he seems to be well-nourished, to have a good color, and, in brief, to be in a very good condition; yet he is suffering from an incurable disease, which, when it attacks a joint, pursues its course relentlessly until the joint is permanently destroyed, and there is ankylosis or partial dislocation. This man's knee-joint has not yet become ankylosed, but I can feel the cartilages slipping around in the joint, and the presence of muscular atrophy increases the apparent deformity. There is already distinct creaking in the temporo-maxillary articulations. In some cases the jaws becomes so firmly fixed that the patients have to be fed with a tube.

Now, what is to be done with this man? The most we can promise is, that we may be able to arrest the progress of the disease, if his circumstances will allow of his carrying out the proper course of treatment; although he must understand that he is crippled for life. If the disease is to be arrested at all, it is by an entire change in the processes of his nutrition. It is absolutely necessary that he should be placed in a warm, dry climate, below the frost-line, where he may live most of the time in the open air. His diet must consist largely of milk, and all stimulants except spirits must be avoided. A moderate indulgence in spirits seems beneficial. In conjunction with this line of treatment, arsenic and cod-liver oil are capable of giving marked relief, but by themselves they are useless. If several years ago, this man had gone to a warm climate, and had been provided with the best hygienic surroundings, it is probable that the disease would not have advanced, or, at any rate, to so great a degree. In almost every country town you will find similar cases, which have been treated as cases of ordinary rheumatism until the time for helping them has passed. Please remember that this disease is incurable; that the premonitory symptoms are general tenderness and occasional soreness of the joints, followed by crepitation of the joints on motion. The latter is always suggestive and may enable you to make an early diagnosis. Then is the time, when, by carrying out the mode of treatment which has just been outlined, you may prevent or arrest its development.

CANCER OF THE LIVER.

The next patient tells us that his present disease began after exposure to wet and cold four months ago. He first felt pain in the region of the stomach, then below it, and a few days later, after another exposure, he began to suffer from pain in the left side. which increased

when he lay upon that side. Five or six days later, there was pain on the right side, especially on deep inspiration. The pain is still present, and is increased by motion as well as by inspiration. You notice that while I am talking the pain has become so severe as to cause him to turn a little upon the side. There is also a slight cough, which he endeavors to suppress. He has had no serious illness except an attack of malarial fever about eight years ago. Ten years ago, he had some form of venereal disease, but he has had none of the usual symptoms of syphilis. He began to drink liquor at the age of twenty-two years, but has only occasionally been intoxicated. His children are healthy. During his present illness he has lost flesh rapidly. Examination of the urine shows the presence of albumin and of granular and hyaline casts. His pulse indicates arterial tension, and would lead me to suspect the presence of some forms of nephritis. The temperature in a single instance reached 103°, but generally ranges from 99° to 100°.

Inspection shows a general fulness of the abdomen, an almost entire absence of abdominal respiration, and an enlargement of the superficial veins. The abdominal walls are so tense that palpation can be only imperfectly performed, but there are evidently great tension and tenderness over the upper portion of the abdomen, while the lower portion is yielding and painless. Over the upper portion the sensation to the hand is that of a solid mass of great size, and apparently deeply seated. The edge of the mass feels rounded, and is smooth and not nodular. There is no friction-sound over the enlargement below the free border of the ribs, and on coughing no murmur is heard over the mass. There is dulness along the right nipple-line for more than twice the normal distance, and flatness on percussion below the fifth rib posteriorly. Crepitating pleural friction is heard over the entire posterior part of the chest, but is more marked on the right side. A few œdematous râles are audible, and above the line of dulness the respiratory murmur is distinct. The heart-sounds are normal. There is no œdema of the lower extremities.

A man who has emaciated so rapidly without very high fever has evidently some serious malady, and the great pain, as well as the expression of his countenance, confirms this opinion. In cases of fatty liver the edge of the organ is rounded; in waxy liver it is sharp and well defined. This man has had none of the constitutional symptoms of syphilis, and it would be hardly possible to have advanced visceral syphilis without previous well-marked secondary manifestations. Waxy liver is the most common degeneration caused by syphilis, but there is a form of cirrhosis with gummatous formations which develops after syphilis, and is very closely allied in its symptoms to that seen in alcoholics. This man has not been an excessive drinker, and has not the bronzed hue or the slight yellow tinge which usually accompanies cirrhosis of the liver. Again, cirrhosis of the liver is not often accompanied by a rise of temperature; on the contrary, it is more commonly associated with a subnormal temperature. If this man, then, has cirrhosis it is complicated by some other condition. Hypertrophy and cirrhosis of the liver might account for the enlargement, and an attendant perihepatitis might account for the pain and tenderness. Perihepatitis causes pain in very many conditions of hepatic enlargement. In this way, waxy liver might be accompanied by pain. In abscess of the liver the organ is enlarged and there is generally a point of maximum tenderness. It is accompanied by some fever, and sometimes by jaundice. Usually there is a history of a chill, and sometimes fluctuation is present. Traumatism frequently precedes it, or there may be a localized suppuration involving some portion of the intestinal tract which gives rise to circumscribed hepatitis. The more acute abscesses not infrequently are associated with dysentery. When the abscesses are of slow development, and are not accompanied by very acute symptoms, there may be no assignable cause. If the abscesses are large, as they must be if they exist in this case, the patient would in all probability suffer from chills.

Here, then, is a patient with localized peritonitis, pleurisy, nephritis, and an enlarged liver. The most important question, and the most difficult one to answer is, What has produced this enlargement of the liver? There is undoubtedly a perihepatitis, and an extension of the inflammation from the abdominal cavity through the diaphragm into the pleura. We cannot at present make a positive diagnosis in this case between abscess and cancer of the liver, but I am inclined to think that the disease is cancer.

KOCH'S METHOD OF TREATING TUBERCULOSIS.

A Lecture
delivered in the Jefferson Medical College,
January 8, 1891.

BY SAMUEL G DIXON, M.D.,
BACTERIOLOGIST TO THE ACADEMY OF NATURAL SCIENCES OF PHILADELPHIA.

GENTLEMEN: While in Berlin I had the opportunity of meeting many prominent men who were interested in Koch's discovery and of hearing their opinions concerning it. It may not be out of place, therefore, should I venture to state briefly my impressions regarding Koch's remedy. Here is a diagram on the right side of which you may possibly recognize stained tubercle bacilli in lung tissue, whereas on the left tubercle bacilli, double stained, are represented. When these minute single-celled microorganisms in full vitality enter the animal economy in sufficient number to overcome the army of animal cells whose function it is to devour all intruders, an active destruction of tissue is set up which is very difficult to overcome, unless recognized in its very incipiency. The tubercle bacillus is man's greatest enemy and tuberculosis has robbed more families of happiness than any other disease; but I am ashamed to say that there is not yet a well-endowed bacteriological laboratory in this city of nearly a million inhabitants. Studies such as those of Koch should stimulate rich men to endow laboratories for original research and teaching.

In 1889 I advanced the theory that by a thorough filtering out of tubercle bacilli from tubercular matter we might obtain a fluid which could be so weakened that by systematic inoculations a change might be produced in living animal tissue that would overcome tuberculosis. The announcement of this theory was accompanied by a statement that favorable results had been obtained

in animals so treated. Owing to an unavoidable delay I was unable to push my work to a close. I regret the interruption to my work, for during this time Professor Robert Koch, for whom I have the most profound respect, produced the fluid that I now hold in my hand, which probably contains less débris than any I had obtained at the time when he made his first announcement. About one one-thousandth dilution of this, it is supposed, acts upon tuberculous tissue.

The reagent is, probably, a metabolic product of the tubercle bacillus, the bacilli having been filtered out. With this active principle I am inclined to believe there are glycerin, gelatin, and some salt, probably a salt of gold. How this filtrate acts we do not know, but it may be conjectured that when the bacillus comes in contact with animal tissues it is stimulated to secrete some material which changes the chemical arrangement of the tissues and renders them capable of being absorbed.

The effect on the tissue seems to be an inflammatory one of a degree peculiar to the action of the tubercle bacillus and suited to its existence. If this be an explanation of the process, we may seek to neutralize the secretion of the bacillus and thereby prevent it from acting on the animal tissues; or again we may cultivate the organism on an artificial medium and then isolate in a concentrated form that which breaks up tuberculous tissue. This material when injected into the system which is already the habitat of the tubercle bacillus, meets with the normal secretion of that microorganism which is present in amounts just sufficient to render the tissues suitable for the growth of the bacillus. As soon as the artificial poison is added, the inflammatory condition of the tuberculous tissues becomes greater than that degree suited to the life of the existing microorganisms, the tissue is killed, and with the organisms falls away from the new surface. This is but a theory, for tuberculosis is a chronic disturbance, in which the microörganism is not killed by its own product as we suppose is the case in acute infectious diseases.

Dr. T. Lauder Brunton intimates that the Koch fluid may be a product of other than the tubercle bacillus. He cites the fact that lupus has been seen to shrivel and necrose after an attack of erysipelas or measles, and that peritonitis, supposed to be tubercular, has disappeared during recovery from diphtheria.

I believe that the Koch liquid is made from or by means of the tubercle bacillus. Its action on tuberculous tissue is simply marvellous. During my short stay in Berlin I did not see the reaction take place in tissues other than those which I suspected were tuberculous, unless it was in the nodules of leprosy. The lepra tubercles seemed to change color somewhat under the action of the Koch fluid. Yet to get the characteristic reaction, a dose sufficiently large to react on a healthy person had to be administered. If it does affect leprosy tissue, it is not surprising, as the lepra bacilli that I have examined appear to be related to the tubercle bacillus. However, their smaller size and their apparent motility being the points of difference, at present I am inclined to the opinion that the reaction produced by Koch's fluid is diagnostic of tubercular tissue; yet, until its curative power is determined, we must be cautious in our use of it as a diagnostic agent, for we have been taught that inflammation which, in all probability is tuberculous, is often set up in tissue that before treatment was apparently healthy.

The common experience with lupus-cases is somewhat as follows: In about five hours after the injection of the fluid, the temperature begins to rise, reaching its maximum quite suddenly. Then it soon falls to normal and in very anæmic patients reaches an alarmingly low degree. In one case of pernicious anæmia death soon followed the injection.

During treatment, a nodular infiltration takes place. The œdema which is present in many cases is exaggerated. As the fever subsides, prostration is often experienced, and the nodules gradually become covered with a crust under which can be detected healthy granulations. When these crusts fall off, red cicatrices are to be seen, and the surface soon presents the appearance of a perfect cure; but in some cases, after a few weeks the lupus-spots take on an inflammatory condition. We do not know how far the remedy destroys tuberculous tissue, for while it destroys recognizable tuberculous matter, the recurrence of the disease demonstrates that there may exist tuberculous tissue which the remedy will not destroy.

In the Charité Hospital I saw a case of lupus in a boy ten years old. The lesion began about the bridge of the nose and extended down on either side, involving the alæ and the skin covering both the superior and inferior maxillary regions. An injection of 0.002 gm. of Koch's fluid caused a rigor, vomiting, and a severe reaction, the temperature reaching 105° F., with the symptoms that usually follow the administration of a large dose when the area of tuberculous tissue is extensive. The patient soon became covered with a rash resembling scarlatina, and this process went on to desquamation, which involved the entire surface of the body. The lupus-tissue passed through the changes described until a healthy cicatrix was formed.

In another case of lupus, an irritating cough and harsh voice developed after the second injection. After the third injection, small clusters of red excrescences appeared on the right vocal cord. After some days the lupus was seen to be granulating nicely, the inflammation on the vocal cord had subsided, and the cough was rapidly decreasing.

To use the liquid, a one-per-cent. solution should be prepared by placing 0.1 c. c. of the fluid into a glass vessel graduated to 10 c. c. The vessel is then filled to 10 c. c. with sterilized water. 1 c. c. of this solution contains a dose of 0.01 c. c. of the original Koch fluid. The Koch syringe that I have here is graduated in tenths up to a capacity of 1 c. c.; therefore, if 1 c. c. of this one-per-cent. dilution be placed in the syringe, one-tenth of the syringeful will contain 0.001 c. c. of the remedy. In giving large doses, the ten-per-cent. dilution should be used.

Owing to the suppuration set up by the Koch liquid, in the vascular tissue immediately surrounding the tubercles, the remedy is positively contra-indicated in tubercular meningitis. This being so, the practitioner in treating other forms of the disease must be on the watch for indications of cerebral involvement.

Regarding its value in surgical tuberculosis, I can remember one case of resection of a rib of a patient in the Charité, in which the granulations had become

indolent, and the wound absolutely refused to heal until put under the Koch treatment. Reaction was produced by the first inoculation, after which healthy granulations developed and continued up to the day that I last saw the case, which was about the tenth day after the first injection.

The therapeutic value of the fluid in joint- and bone-tuberculosis is promising. Children in the Charité Hospital suffering with hip-joint tuberculosis seemed to experience much less pain when the joints were moved after treatment with the Koch lymph. The results in cases treated with the remedy until no further reaction could be produced and then operated on by mechanically removing all the necrosed bone and tissue seemed to be much better than those not so treated. If the necrotic parts are not removed they are likely to reinfect the system, as the débris disintegrates. This is especially so when there is a general predisposition to tuberculosis.

In one case of kidney-tuberculosis tubercle bacilli were found in the blood and urine. The remedy caused rigors and vomiting and an elevation of temperature to 105° F. When I last heard, this case was going from bad to worse.

After a successful experience with a reagent on guinea-pigs suffering from tuberculosis of the lung-tissue, I am disappointed that more has not been accomplished, but I have much faith in the ultimate triumph of the liquid over pulmonary phthisis, provided that the lesion is recognized and treated in its very incipiency. It must be borne in mind that the guinea-pigs which I have cured were in all probability not predisposed to tuberculosis. The remedy may render tissues more susceptible to the action of bacilli than before its introduction. Further, it may even disseminate bacilli into tissue that otherwise would never have become tuberculous. Should the dissemination of tuberculosis be extensive, the great decrease in the healthy lung parenchyma may prove disastrous to the life of the patient. Consequently, the remedy is positively contra-indicated in widely-disseminated lung tuberculosis, unless a much smaller dose than I have yet heard of be employed. My idea is, then, that we may be able to reduce the dose, so that it will be neutralized before it stimulates inflammation throughout the entire tuberculous tissue, and in this manner the living tuberculous tissue may be acted on step by step, so as not to cut the life of the patient short by a general inflammation throughout the entire area of tubercular tissue at one and the same time. What I have said about extensive lung tuberculosis, I believe will hold good regarding extensive tuberculosis of the larynx.

I cannot believe that a small cavity in the lung positively contra-indicates the use of the remedy. It is possible that the necrotic tissue will be absorbed and that the newly-formed walls in a number of cases will resist the attack of the living bacilli left in the necrosed tissue and cheesy masses.

In the treatment of mild cases of pulmonary tuberculosis, small doses of the liquid are used, the average initial dose being 0.001 c. c. About five or six hours after the injection there may or may not be a chill, followed by fever running from 102° F. to 106° F. The fever generally falls within two hours after it reaches its maximum, while sometimes it continues for forty-eight hours. The fever is not always in proportion to the size of the dose, so that at any time there may be an excessive rise after a prolonged period of moderate elevation. In one case the pulse increased to 160 and the respirations to 40. Diarrhœa is not an uncommon symptom. Enlargement of the spleen and the lymphatic glands is frequently perceptible. The patients often have an expression of great illness. The sputum frequently increases in quantity and contains necrosed tissue. The bacilli also increase in number after treatment, and you frequently find a change in the form of the bacilli resembling in morphology those we can cultivate on culture-media poor in peptones. After prolonged treatment both the sputum and bacilli decrease, while in many instances the tubercular process would seem to continue even after the injection of the liquid ceased to produce any reaction. The physical signs from percussion and palpation do not change except when an active inflammation is set up by the reagent, in what was not recognized as tubercle tissue.

To picture better the action of the remedy in pulmonary tuberculosis, I will give you the following history of an interesting case in the Charité:

A girl, aged twenty-three years, who had been treated with morphine and creasote. Her father and mother died from phthisis, and she has sisters now suffering from the same disease. Menses began at the age of eighteen and have been regular.

She was healthy before the summer of 1888.

Nine weeks ago when she entered the hospital her muscles were flabby and she felt weak, but there was no loss of power.

Conjunctiva, lips, and oral mucous membrane anæmic. Tongue moist. Teeth good. Pulse normal. Form of chest good. Costal respiration somewhat increased on both sides. Lungs and heart of normal size. Slight dulness over left apex, but still some vesicular breathing, with a few crepitant râles. Dry, hacking cough.

Weight on entering, one hundred pounds. In three weeks she lost two pounds.

Bad cough, difficult expectoration, and slight pain in apices and other parts of the chest. Could not eat well. Cough caused vomiting. Night-sweats.

When she entered the hospital she could not sleep even after the administration of one-fourth of a grain of morphine.

November 19. Over right apex vesicular breathing. Dulness over left apex. Between the arytenoid cartilages there were to be seen projections forming the walls of ulceration.

21st. 0.002 c.c. of the Koch fluid injected. Slight nausea. Temperature rose to 38.3°. Expectoration increased. Pulse 100. Respirations 20.

22d. 0.005 c.c. of the Koch fluid injected. Morning temperature normal. At 6 P. M. 39.8° C. Pulse 124. Respirations 25. Spots on larynx slightly swollen. Cough looser.

23d. Morning temperature normal. Evening temperture 37.6° C. Respiration 22, pulse 104. Gray spots appear on larynx.

24th. 0.005 c. c. injected. Morning temperature normal. At 6 P. M. 38.6° C. Slight friction-sound in left lung between axillary and mammary lines. Marked enlargement of the ulcers on the arytenoid cartilages. Left vocal cord shows grayish spots; moist râles in left apex.

Increased dulness in left lung. Further enlargement of ulcers on arytenoid bodies. Bronchial breathing. Great weakness.

26th. 0.008 c. c. injected. Morning temperature normal. Evening temperature, 9 P. M., 40.1° C. Pulse and respiration unchanged. Cough increased. Expectoration lessened. Sleeplessness returned.

27th. No change.

28th. 0.010 c. c. injected. Afternoon temperature, 38.3° C.

29th. A markedly improved general condition. Area of dulness lessened. No râles to be heard excepting over right clavicle.

December 1. 0.013 c. c. injected. Afternoon temperature 38.8° C. Up to this time there was a gain in body-weight of two pounds.

4th. 0.015 c. c. injected. Afternoon temperature, 39.5° C. Pulse 130. Respirations unchanged. Area of dulness increased. An increase of râles. With these conditions, a general disturbance was manifest. Bacilli continue in as large numbers as at first.

8th. The patient has lost one pound.

This history is about an average one. It certainly teaches us very little excepting that if improvement in pulmonary phthisis occurs under the Koch treatment, it is exceedingly slow, yet at the same time it shows that there is little or no *immediate* danger in the use of the liquid in mild cases of pulmonary tuberculosis, unless in exceptional cases in which there happens to be tissue that is hypersensitive to the action of the remedy.

While watching the effects of the liquid on lupus, the question that arises is, After the treatment, what condition are the tissues in immediately adjoining those which were sufficiently tuberculous to necrose under the inflammatory process produced by the Koch fluid? Will this apparently healthy tissue in the human economy be rendered immune, or will it be rendered more susceptible to the tuberculous process?

Professor Koch personally informed me that he felt quite certain of the power of his remedy to cure lupus and very mild cases of laryngeal tuberculosis, but that he did not believe it safe at present to make any estimate of its therapeutic value in other forms of tuberculosis.

ORIGINAL ARTICLES.

A CASE IN WHICH A FOREIGN BODY WAS LEFT IN THE ABDOMINAL CAVITY AFTER OVARIOTOMY;

And Some Remarks upon the Effect of Tapping a Unilocular Ovarian Cyst.

BY RICHARD WILSON, M.D.,
OF PHILADELPHIA.

THROUGH the kindness of Dr. Walter F. Atlee, I am permitted to publish the following case, which is of interest on account of the rare and serious accident which happened, and because it shows once more the effects of tapping on the contents of an ovarian cyst.

Mrs. T. P., aged fifty-one years, married, has three children, the youngest eleven years old. She ceased menstruating about six years previously to the time when first seen by Dr. Atlee, January 19, 1888. For many months she had been treated medicinally for "abdominal dropsy." Dr. Atlee diagnosed a monolocular ovarian cyst, and the patient refusing ovariotomy was tapped. The liquid flowed freely through the tube to the amount of three gallons (one and a half bucketfuls), and was readily recognized as the contents of a cyst.

April 22, 1889. The patient, who again refused to have the cyst removed, was tapped a second time. One gallon of glutinous fluid, which was so thick as to flow with difficulty through the large tube, and colored with blood, escaped.

July 29. Ovariotomy was performed by Dr. Atlee, with two assistants besides the anæsthetizer. There was much ascitic fluid in the abdomen; the contents of the tumor were gelatinous and would not flow through the canula, although a large one was used. The pedicle was dropped into the abdomen.

Before the operation, the assistant who had charge of the sponges forgot to count them, and after the operation he found eight. Dr. Atlee said that he always used nine sponges, and ordered the room to be searched for the missing sponge—a flat one the size of a hand, introduced to absorb the blood while suturing the abdominal walls. As he was in a hurry, having a pressing engagement, he did not wait, so confident was he that the sponge would be found. But it was not found.

The patient did perfectly well until August 2d, the fourth day after the operation, when nausea and vomiting, with tenderness and swelling of the abdomen developed. Dr. Atlee thought that he felt to the right of, and somewhat above, the navel, a body that might be the missing sponge. On the next day he made an incision one and a half inches to the right of the umbilicus, cut through the rectus muscle, and found the peritoneum very much thickened. On opening the peritoneum very foul, stinking gas and some fluid escaped. The sponge was found adherent to the abdominal parietes and to the intestines. The adhesions were torn with the fingers, and after the sponge was removed the intestines had the appearance of coarse velvet. The patient died at 10 P. M. of the same day.

This case is interesting for two reasons. In the first place, there have been very few cases in which foreign bodies were left in the abdomen, and most of these have not been published. Dr. H. C. P. Wilson,[1] of Baltimore, who published a detailed account of a case that happened in his practice, was able to collect the reports of thirty other cases. Of these only ten cases had been published.

In commenting upon this subject, Dr. Wilson says:

"I am convinced that this is a much more frequent cause of death than any of us suppose, and if we were able to collect the number of fatal cases resulting from this source we would be surprised. Unfortunately,

[1] Foreign Bodies Left in the Abdomen after Laparotomy. Transactions of the American Gynecological Society, vol. ix. pp. 94–108.

many of the known fatal cases are not published, because they are damaging to the surgeon's reputation in the profession and in the community in which he lives. Hence these cases are rarely given to the world."

In looking through the *Index Medicus*, I have been able to find the report of only one case in which this accident happened, since the publication of Dr. Wilson's case. This was reported by Dr. W. Gill Wylie,[1] in whose practice it happened, and is in a "Table of Sixteen Miscellaneous Laparotomies" (Table IV., Case 3). The case is as follows:

A married woman, aged thirty-two years, with one child. A diagnosis of abdominal pregnancy had been made. The fœtus was killed at seven and a half months, and there were septic symptoms for several weeks. Abdominal section was performed February 10, 1887. The patient was weak from the prolonged sepsis, and her abdomen was greatly distended. The fœtus, placenta, and several quarts of decomposing fluid were removed. A drainage-tube was used after the operation. The patient "died in thirty-six hours from shock and sepsis." There was "no loss of blood during the operation. Sponges left in the cavity by mistake."

Dr. Wylie makes no further comment on the case.

I think that undoubtedly other cases have occurred since 1884, but either they have not been published, or, like the case of Dr. Wylie, were published among others in tabular form, the title of the article not calling attention to tne case. I have looked through several of such tables without success.

The following is a *résumé* of the thirty cases collected by Dr. H. C. P. Wilson. My excuses for quoting them are the rarity of the accident, its importance, the fact that it has occurred in the practice of skilful surgeons, and that it has been insufficiently noticed, and in the hope of causing greater care in counting the sponges during an abdominal section.

CASE I.—The surgeon was closing the abdomen when his assistant reminded him that there was a sponge in the cavity.

CASE II.—All the stitches had been inserted, and the surgeon was closing the wound, when an assistant told him that a sponge was missing. The wound was opened and after some time the sponge was found behind the intestines.

CASE III.—A sponge was missing after the abdomen had been closed. The wound was opened and the sponge removed. Patient recovered.

CASE IV.—The absence of the sponge was not discovered until revealed by a post-mortem examination.

CASE V.—An autopsy revealed a pair of forceps in the abdominal cavity.

[1] "A Year's Work in Abdominal Surgery, with Report of Eighty Laparotomies done in 1887." Transactions of the Medical Society of the State of New York; Syracuse, 1888, pp. 242–259.

CASE VI.—Dr. H. C. P. Wilson's case. The presence of the sponge in the abdomen was not suspected until it worked its way to the surface several months after the operation, and was removed by Dr. George H. Hocking. The patient recovered.

In commenting on this case Dr. Wilson says:

"This case, so far as I am aware, is unparalleled in the history of abdominal surgery. A woman, five months advanced in pregnancy, has an ovarian tumor removed from her, has a large piece of sponge left in the abdominal cavity, miscarries eighteen days after the ovariotomy, has the sponge remain in her body five months and eighteen days before it escapes through the abdominal walls, and yet the woman is now living and in better health than ever before.

"By what accident this sponge was allowed to remain in the abdominal cavity, I do not know. Before closing the wound I ordered the sponges to be counted, which was done, and reported all correct."

Either a piece of sponge was torn off and permitted to remain, or the counting was incorrect.

The foregoing six cases occurred in America, the following fifteen in Europe. Ten European cases are unpublished (Cases VII. to XVI.), and Wilson could get no history of them, but publishes them on the authority of Lawson Tait, who, after describing his own fatal case, says: "I happen to have heard of ten other cases in which the sponge was left behind.

CASE XVII.—Lawson Tait describes his case as follows: "In one of my operations, a bystander, hearing me ask for a small sponge, tore one in two, so that there were thirteen sponges in use, instead of twelve, and both the nurse and myself were ignorant of the fact. The gentleman who tore the sponge alone knew of his act, and he left the room before the operation was finished. The result was, that we found the thirteenth sponge four days after."

CASE XVIII.—A case of Spencer Wells's. While finishing an operation, Mr. Wells was told by an assistant that a sponge was missing. He requested the nurse to count them, which she did, and reported that they were all there. At the same time he felt in the abdominal cavity but did not find the sponge. This was at 2 or 3 o'clock P. M. At 8 or 9 o'clock P. M. his assistant reported to him that one sponge was missing, and that it must be in the patient's abdomen. At first Mr. Wells did not know what to do about it. As the patient seemed to be in good condition, he did not like to open the abdominal cavity again, so he decided to wait. In the morning the patient was very ill. "I took out two stitches and put my finger in; I felt the sponge, I took it out, reclosed the wound, and the patient was not much the worse for it."

CASE XIX.—Also happened to Spencer Wells, while removing both ovaries. He thought that he had removed every pair of torsion-forceps and closed the wound. About two hours after the operation, he received a message saying that a pair of forceps was missing and that probably they were in the patient's abdomen. The operator saw the pa-

tient at once. She was doing well, and he did not disturb her. She was very restless during the night. On the following day he examined her carefully through the vagina, rectum, and abdominal walls, but could not feel the forceps. Mr. Wells felt very uneasy, and decided to open the wound. Under the pretence of changing the dressing and that it would hurt her, he anæsthetized the patient with methylene, took out two stitches, inserted two fingers in the wound, and found the forceps wrapped in the omentum. From the way in which the omentum had insinuated itself into the ring-handles of the forceps and between the blades, it is easy to understand how difficult it was to remove the instrument; "but I did it, returned the omentum, and closed the wound, and the patient was none the worse. She got perfectly well, and, to this day, does not know that anything unusual occurred."

CASE XX.—A case of Dr. Carl Braun, in which a post-mortem examination revealed a sponge in the abdomen.

CASE XXI.—A case of Dr. Gustav Braun, in which a post-mortem examination revealed a pair of bull-dog forceps in the abdomen.

CASE XXII.—Reported by Dr. T. Gaillard Thomas. In an exploratory incision, a malignant tumor being found, one sponge only was used. The patient died in a few days, and a post-mortem examination revealed in the abdomen a piece of sponge, which must have been torn off.

CASE XXIII.—Reported by Dr. George J. Engelmann, of St. Louis. A post-mortem examination, after ovariotomy, showed a sponge in the abdomen. It was left there through the meddlesomeness of an assistant, which even the watchfulness of a careful operator could not restrain.

CASES XXIV., XXV., XXVI.—Reported by Dr. A. Reeves Jackson, of Chicago. In two cases a sponge was found in the abdominal cavity after death; in the third case a pair of hæmostatic forceps were found. As the gentlemen in whose hands these accidents occurred had not published them, their names were not given.

CASE XXVII.—Reported by Dr. William T. Howard, of Baltimore, as occurring in the hands of an English operator. A post-mortem examination revealed a sponge in the abdomen.

CASE XXVIII.—This case occurred in the practice of one of the most eminent surgeons of America, but as he never published it, his name is not mentioned. A sponge was found in the abdominal cavity.

CASE XXIX.—This case and Case XXX. Wilson reports in a foot-note, as he heard of them after finishing his article. Dr. Wilson received a letter from Dr. Walter F. Atlee, saying: "I was in Lancaster last winter (1883–1884), at my father's, Dr. John L. Atlee, when he received a letter containing the news of the death of a patient from lockjaw, from whom he had successfully removed a large ovarian tumor. When the body was opened, half a sponge was found in the abdomen, and it was discovered that one of the assistants had divided a sponge during the operation. When the sponges were counted after the operation the number was reported correct, and my father was satisfied. This is the last case upon which he operated before his health broke down, and it may have had something to do with his stroke."

CASE XXX.—Reported by Dr. William Wotkyns Seymour, of Troy, N. Y. The case was one of Dr. Horwitz's, of Copenhagen, in which a sponge in the abdomen was found to be the cause of death after abdominal section.

The second point of interest in the case I have reported is that it shows the bad effects of tapping in some cases. At the first tapping, June 18, 1888, clear liquid flowed freely through the tube. At the second tapping, April 22, 1889, the fluid was glutinous and very thick. At the operation, July 29, 1889, the contents of the tumor were gelatinous, and would not flow through a large canula.

All gynecologists are now agreed that, as a rule, ovarian and parovarian cysts should not be tapped. Tapping should be regarded as palliative only, says Emmet, and should not be resorted to except to make a diagnosis, or to gain time, when the condition of the patient does not admit of an operation. It is applicable to single cysts only, and should never be employed in the multilocular variety.

Tait says:

"I cannot regard the introduction of the trocar into the inflamed tissues of the pelvis as a procedure free from danger under all circumstances."

Spencer Wells,[1] from his first five hundred cases, concludes that

"It may be taken as almost certain that the mortality of ovariotomy is but little affected by tapping, that the fact of a patient not having been tapped, or having been tapped very often, is by itself of little or no value in prognosis. I have stated elsewhere that such adhesions as are apt to follow tapping have no appreciable effect upon the mortality after ovariotomy; and I can now add that in some of the patients who have been tapped most frequently there were no adhesions, and that there were firm adhesions in some who had never been tapped.

"Enough has assuredly been adduced to warrant the acceptance of the following propositions:

"(1) That one or more tappings do not greatly increase the mortality of ovariotomy.

"(2) That tapping may often be a useful prelude to ovariotomy, either as a means of gaining time for the patient's general health to recover, or of lessening shock, by relieving her of the fluid a few hours or days before removing the solid portions of an ovarian cyst."

The chief objections to tapping are: (1) The danger of peritonitis, should the fluid be irritating, as it often is, when even a few drops entering the peritoneal cavity might excite inflammation. This is more to be dreaded in the first tapping than in subsequent ones; for, if peritonitis does not set in after the first tapping, the fluid is unirritating, or the cyst is adherent to the abdominal walls. (2) There is always danger of the trocar puncturing a blood-vessel, in either the abdominal wall, the peritoneum,

[1] Diseases of the Ovaries, London, 1872, p. 275.

or the cyst itself. This is a most serious complication if the vessel is large, the symptoms being urgent for an immediate abdominal section. The accident, however, is not common, and the risk is reduced by tapping through the linea alba, which being tendinous, has few and small bloodvessels. (3) Adhesions are apt to form after tapping. These would complicate ovariotomy, should it be required later. (4) A cyst that has been tapped is apt to refill, necessitating a repetition of the tapping. This secretion and elimination of the fluid is a drain on the system (Goodell). On the other hand, Emmet says that, in many cases, tapping may be resorted to for years before the strength of the patient succumbs to the continued drain. Occasionally a single cyst does not refill after having been tapped; but if it does not, the probabilities are that the tumor is a cyst of the broad ligament, the fluid of which is bland and unirritating to the peritoneum. (5) If the cyst is multilocular and the largest cavity is tapped, by removing the pressure on the smaller cysts, it will give them a better opportunity to grow. (6) A cyst that has been emptied is apt to rotate on its axis, and torsion of the pedicle may result, ending in gangrene and peritonitis. (7) Repeated tappings tend to convert benign papillary growths into malignant growths (Goodell). (8) According to Tait, repeated tappings deprive the blood of some of its elements. Such elements are found among the great variety of albuminous substances in ovarian cysts, the deficiency of which in the blood predisposes to coagulation.

There are, however, cases in which tapping cannot be dispensed with: (1) Women often refuse the radical treatment, as they have heard of cases in which tapping was followed by cure. They will not submit to ovariotomy until repeated tappings have proved to them that this treatment is only palliative. (2) Cysts of the parovarium and of the broad ligament being often cured by the use of the trocar, it is proper to try the effect of one tapping in slowly-growing, unilocular, thin-walled, flaccid cysts, which thus exhibit the chief characteristics of these extra-ovarian cysts (Goodell). The contents of these cysts are generally limpid, but they may be very thick and gelatinous, and the color may vary from the lightest to the darkest shades. "When the contents are limpid and of low specific gravity, tapping probably does little harm to the constitution, for the system is robbed of little more than water. Such cases probably yield the instances in which tapping has been performed an enormous number of times over a long series of years" (Tait[1]). (3) In advanced pregnancy, tapping may be necessary to allow the woman to go to term. (4) If the cyst, by its large size, presses on the vital organs, and thus interferes with their functions. (5) To clear up a doubtful diagnosis. (6) In cases in which a large number of adhesions make ovariotomy impracticable.

[1] "The Pathological Importance of the Broad Ligaments." Edinburgh Medical Journal, July and August, 1889.

FOREIGN BODIES IN THE NOSE IN CHILDREN, VERSUS NASAL CATARRH.

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AT first thought, it may seem impossible to mistake a foreign body in the nose for catarrh, and, doubtless, this is quite true if the patient is seen shortly after the accident. In many cases, however, when advice is sought, no history of a foreign body having been introduced into the nose can be obtained, and the attendant, therefore, treats the patient for simple catarrh, and, perhaps, only after months or even years have elapsed is the real nature of the affection discovered.

The frequency with which I have met instances of foreign bodies in the nasal passages being mistaken for catarrh leads me to believe that this error in diagnosis is not uncommon, and warrants me in briefly recording some examples in illustration of my observation. During the past few years five cases have come under my care in hospital and private practice in which this oversight had been made.

CASE I.—The patient had been the subject of so-called catarrh for one year, and had been treated for a variety of affections, among them malarial fever and inflammation of the brain. I removed a shoe-button from the right nasal fossa.

CASE II.—The patient was brought to my clinic with an offensive discharge, from one nostril, of several months' duration. A cinder the size of a small pea was found to be the exciting cause of the trouble.

CASE III.—This case had all the objective symptoms of chronic purulent rhinitis, chiefly affecting one side. The upper lip was excoriated, and the breath very fœtid. Upon exploring with a probe, a hard substance was detected, which, when extracted, was found to be an ordinary shoe-button.

CASE IV.—This patient was brought to me because the parents thought that the child had a tumor in her nose; and, judging from appearances, the diagnosis was not unreasonable. Protruding from the nasal orifice on the left side a fungous mass was observed, from which exuded a yellowish discharge tinged with blood. The face was slightly swollen, and the integument discolored on the corresponding side. A grating sensation was communicated to the hand upon the introduction of the probe, and further investigation, with the patient under ether, proved the obstacle to be a shoe-button.

CASE V.—A little girl from an adjoining State, had been treated for catarrh by her family physician

for two years, without success. Patent medicines had also been liberally used. The symptoms being those of a foreign body in the nose, I gave the child ether and removed a shoe-button from the right nasal fossa.

In not one of these cases had the nasal passages been properly examined. There is no better light than the sun for investigating the upper air-passages, and the simple introduction of a probe into the nostrils, the head of the child being held firmly between the knees of the surgeon, is not a difficult operation. If, on account of the restlessness of the child, this is not possible, a few whiffs of an anæsthetic will be sufficient to enable one to decide whether there is any obstruction in the nasal fossæ, and, if one is present, its nature. The diagnosis may also be made by a thorough examination of the nose anteriorly and posteriorly, and by ascertaining if the patient has at any time breathed perfectly through both nostrils, and if the coryza came on suddenly with a watery discharge and obstruction on one side.

Necrosis being excluded, a foreign body in the nose is the most rational diagnosis to make when we detect a hard substance in the nasal passages of a child. The age of the patient will also throw some light upon the case, for foreign bodies are most frequently found in children between the time when they begin to creep and the age of six years.

Foreign bodies in the nose may be mistaken for tumors, deviation of the septum, hypertrophy of the middle and inferior turbinated bodies, abscess, congenital syphilis, etc.; but these affections are excluded by careful examination.

Before beginning the operation for the removal of a foreign body from the nose, it is best to wrap the child in a sheet or towel, in order to confine the arms and legs; then, with an assistant holding the body, the head of the child is placed between the knees of the surgeon and a probe gently introduced into the nostril. If a foreign body is present, a sense of resistance will be felt if the substance be soft, or a grating sensation if it be hard, and the operation may be completed without delay. The parts surrounding the foreign body will, as a rule, be found swollen, and, for the purpose of reducing this turgescence, the application of a solution of cocaine is advisable, followed a few moments later by a spray of liquid alboline to facilitate the removal. The subsequent treatment consists simply in washing out the nose twice daily with a weak solution of the permanganate of potassium.

Of the various instruments for the removal of foreign bodies from the nose, I prefer Gross's extractor and the wire-loop in ordinary cases. A pair of slender forceps may be at hand for withdrawing the substance after it is brought to the nasal orifice. In children who are tractable the operation may be performed without an anæsthetic, but in the majority of cases much time and pain are saved by the careful use of an anæsthetic.

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CEREBRAL SYPHILIS, WITH REPORTS OF CASES.[1]

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AN essay might well be written on the consequence of syphilis to the human race, showing the baneful influence which this disease has been and is exerting upon the civilized countries of the world. Although its virulence, as the history of these countries shows,[2] is not now so malignant as it was in the past, yet much of the diseased condition of humanity is attributable to the inherited or acquired poison of syphilis.

I have not the time or the ability for such an essay, and shall confine my remarks to the effects of the disease upon the brain. The past twenty years have witnessed enormous strides toward establishing the principles of cerebral localization. There are yet many unexplained clinical facts regarding the seat of disease, but such facts as we now have enable us to understand more fully the functions of the brain, and the methods of diagnosis of cerebral disease. In cerebral syphilis the diagnosis depends in many cases wholly upon our knowledge of cerebral localization. The external evidences of the disease are wanting. The previous histories of such cases are, as a rule, defective, and the patient may be entirely ignorant of having had syphilis, because of the absence of the signs or symptoms of its primary or secondary stages.[3] Further, it is a fact, that nervous involvement due to syphilis generally occurs years after the appearance of the initial lesion, when the apparent evidences of the diathesis may have entirely disappeared, especially because the nervous system is more prone to be attacked when the secondary symptoms have been slight than when the earlier manifestations have been severe.[4] A great many cases have such marked constitutional symptoms that the presence of syphilis cannot be mistaken. The various cutaneous and osseous lesions themselves tell the tale which the patient will not. But, those obscure cases, with no cicatrices on the genitals or groins, no scars on the forehead, no tenderness over the sternum, and no iritic adhesions, are the cases which call for our recogni-

[1] Read at the Sixteenth Annual Meeting of the Mississippi Valley Medical Association, October 10, 1890.
[2] Medical Record, June 8, 1889.
[3] Dowse: Brain, vol. 1.
[4] H. C. Wood: Pepper's System of Medicine.

tion of the focal symptoms and their meaning. To diagnose cerebral syphilis we must keep in mind the propositions of Hughlings Jackson,[1] namely: (1) no single symptom is diagnostic of syphilis; (2) disorderly groupings and succession of certain symptoms are very strong evidence in favor of it; (3) certain single symptoms, however, are premonitory to the outbreak of more severe cerebral disturbances. Of these, headache, generally localized and with nocturnal exacerbations, is the most pronounced. Next, we may mention insomnia, which, says Buzzard,[2] when prolonged without any evident cause, should suggest an inquiry in regard to the existence of constitutional syphilis. Somnolence, also quite marked in many cases, and often terminating in fatal coma, is the first evidence of any cerebral disturbance. Vertigo, numbness of the extremities, loss of memory, excitability, and irritability of temper, are also premonitory symptoms.

Nearly all cases of cerebral syphilis are tertiary phenomena, and consequently due to gummata; but, in the observation of thirty-six cases of the disease I have seen several which were undoubtedly primary, and some which were secondary in origin.

The following cases of mental disturbance occurred during the continuance of primary symptoms:

CASE I.—A man, aged twenty-one years, who contracted syphilis three months previously. A phagedænic ulcer had formed, and was not quite healed when I first saw him. There was general enlargement of the glands, mucous patches in the mouth, and a pustular inflammation on the forehead. He was then under treatment for syphilis, and had been for some time, so that the manifestations of the disease were modified by the mercury he was taking. The cerebral symptoms were, briefly: Insomnia, headache, followed by somnolence, and later by a somnambulistic state. The last condition was first noticed while attending a party. He had an attack of severe headache, with vertigo, asked permission to lie down, was shown a bedroom, and his recollection ends with his lying upon the bed. He reappeared in the dining room after a short absence, and, much to the astonishment of all, was quite devoted to a young lady with whom it was known he had previously quarrelled. She could not account for his devotion, excepting by the belief that he had been drinking. His friends, fearing that such was the case, invited him to remain all night. In the morning, when told of his reappearance on the floor, and his attention to the young lady, he denied all recollection of it whatever, and accused his friends of joking. He further denied taking liquor of any kind.

Ten days later a similar attack, with the same prodromes, occurred. On this occasion he left home, and when he regained consciousness found himself in a hotel, in a city forty miles distant. How he came there, how long he had been away from home, or what he had been doing, he knew not. He returned home, and a few days later repeated the trip. This time it was forty-eight hours before he regained consciousness. As before, he had no recollection of what occurred. A third time he started for the neighboring city, but was overtaken by his brother at the railroad station. When accosted by his brother he appeared natural in his behavior, but was not subject to external influences, was seemingly in deep thought, was more or less automatic in his movements, and would not converse. When he regained consciousness he was greatly surprised to learn what he had done.

I saw him on the next day, when he was worried, melancholic, and self-accusative. After satisfying myself that it was undoubtedly a case of syphilis, I put him upon the iodide of potassium, and also directed him to continue the mercury. About three weeks later he reported again, saying that he had not been troubled since he first saw me, excepting with headache, lasting for a short time. He informed me that he contemplated going to Hot Springs, Arkansas, and this was the last time that I saw him. I have since learned that he returned home in due time very much benefited, and is now in a normal mental condition.

The strangeness of the symptoms, the departure from the ordinary type of organic disease, and the somnambulistic manifestation, all point to some perversion of the circulation, or an abnormal condition of the blood itself, affecting the supreme cerebral centres. If the cause was perverted circulation, we do not know the actual condition of the brain under these circumstances. It is reasonable to conjecture that alteration in the cerebral circulation was the cause, when we consider the distribution of the arteries and the physiology of sleep.

The arteries which supply certain areas of the convolutions may be affected, causing activity of the circulation in these vascular areas, and, as a result, somnambulistic dreams.[1] The affection of the arteries may be either vasomotor disturbance, or cell-proliferation within the walls of the vessel of the pia, causing diminution of the circulation, and, consequently, malnutrition, and lessening, or perversion of the functional activity of the ganglionic cells in the underlying brain-substance. If such is the case, the observation of and comparison with other cases might lead to localization of the mental faculties.

CASE II. *Late secondary phenomena.*—A man, aged twenty-three years, single (history defective). For six months prior to his admission in the Illinois Central Hospital for the Insane he was confined to his bed at home. When admitted he was feeble and emaciated, his circulation was poor, and bowels

[1] Lancet, February 21, 1880.

[2] Lancet, 1873.

[1] Maudsley: Physiology of the Brain.

constipated. The mental symptoms were those of acute primary dementia. He had not spoken for several months, stared vacantly, and, apparently, was not conscious of his surroundings. He was filthy in his habits, had an inordinate appetite, and would eat anything, including his own fæces. No history of syphilis was given by his friends, but evidences of primary lesions were marked. Secondary manifestations, such as thinning of the hair of the scalp, and skin eruptions, resembling psoriasis, on the posterior surfaces of the lower extremities and on the anterior surface of his arms, were present. (Hutchinson regards such an eruption as syphilitic in origin.) No marked superficial tertiary symptoms were shown.

Acting on the supposition that the case was one of syphilis, I immediately put him on anti-syphilitic treatment. No marked change occurred for several weeks, except a gradual improvement in his general health. At the end of three months he had improved so much that he was able to dress himself and attend to his wants, and was interested in his surroundings. Ataxic aphasia soon took the place of the complete aphasia which had prevailed for six months. This gradually faded away with the improvement in his general mental condition, and he was able to converse rationally, his articulation becoming perfect. He then gave me a history of syphilis contracted two years before. The primary lesions were slight, and he had no recollection regarding the appearance of the secondary phenomena. He was discharged cured, so far as his insanity was concerned, six months after admission. He had gained forty-five pounds in weight, and had all the indications of good health. He is now married, and follows his trade, that of a painter and decorator, in Chicago. One and one-half years have elapsed since he was discharged, and as yet he has had no evidences of a return of the disease.

This case is interesting because of the long duration of functional disorder of the brain, and the subsequent complete recovery, with no evidence whatever of organic change. The pathology of the case can probably be explained by conditions similar in nature to those in the preceding case, namely, an arteritis not sufficient to produce organic changes, but, so far advanced as to affect the nutrition of that part of the brain presiding over the intellectual faculties. The coëxisting aphasia locates the disturbance in the vicinity of the Sylvian artery, for we know that all impairment of speech is due to the involvement of the terminal branches of that artery.

The more common form of cerebral syphilis is, as I have before stated, a tertiary phenomenon, and therefore a disease of tissue.

The following case is typical of gummatous deposit:

CASE III.—Male, aged thirty-five years, married, had syphilis twelve years before admission to the hospital. Three years before, his friends decided to have him committed as insane. He had an apoplectic stroke, followed by hemiplegia, lasting but a short time. Following this a gradual change was noticed in his mental condition; he became forgetful, irritable, and excitable. One and one-half years later he had a second apoplectic attack, with hemiplegia; became partially blind; had partial ptosis of short duration, and strabismus, and declined slowly mentally. Amnesic aphasia then developed, and later partial ataxic aphasia. His physical health on admission was fair. Mentally, he was excitable and delusional, having delusions of grandeur, and believing that he possessed unlimited wealth and power.

One evening, while at supper, about three months after admission, he suddenly became unconscious, fell to the floor, and had a severe convulsion, followed by a variety of symptoms, indicating a general effusion into the lesion. He regained consciousness in about twenty-four hours, but was more or less somnolent for several days, after which time he seemed to be about as usual. He declined slowly in general health, and paretic symptoms became marked and variable. Four months later he again became unconscious, and had several severe convulsions, followed by profound coma, which lasted until his death, nine days later. The paralytic symptoms observed from the inception of the disease until death were briefly as follows: Ptosis, at first transitory, but at last becoming permanent, and loss of accommodation, with bulging of the eyes. This group of symptoms indicates involvement of the third nerve, and considered with the headache which was localized, more or less persistent, and unusually severe at night, suggests syphilis. (Jackson.) Further, the involvement of the sixth nerve, as indicated by transitory internal strabismus, due to paralysis of the external rectus muscle, indicates syphilis. Aphasia, progressive, and ultimately complete, showed complications in the vicinity of the Sylvian artery, which resulted in complete destruction of the artery, as verified by post-mortem examination. Hemiplegia, at first short in duration, afterward permanent, was primarily due to impeded circulation, finally to occlusion of the middle cerebral artery. Hemiplegia, accompanied with loss of consciousness, can always be attributed to intracranial disturbances. The bedsores which developed on the nates, heels, and elbows, showed indication of impairment of the trophic nerve-fibres.

The psychical symptoms were varied, and slow in development, delusions of grandeur being especially marked. Such delusions are characteristic of certain specific cases. The post-mortem examination revealed further evidences of the existence of syphilis. The dura and pia were matted together, which, according to Meyer, is pathognomonic of syphilis. A deposit of granular tissue, similar to that found in syphilitic growths, was found at the base of the brain, in the region which the focal symptoms had indicated. H. C. Wood says it is well known that morbid exudations, not tubercular or syphilitic, are rare in this region, and this fact, taken into consideration with the abrupt and variable paralytic symptoms, strongly point to syphilis as the cause of the patient's brain-disease.

The following case shows the strong relationship between cerebral syphilis and general paralysis:

CASE IV.—Patient was a male, aged forty-four years, married. A gradual change had been noticed in his disposition and mental power for more than a year previously to his admission to the hospital. He became forgetful, irritable, and even homicidal, and attempted to kill his wife. On admission he had the following paretic symptoms: Tabes dorsalis, lack of general muscular coördination, and marked impairment of articulation. The pupils were unequally dilated, the right being the larger, and bodily nutrition was impaired. The mental symptoms were characteristic of general paralysis, viz.: Delusions of grandeur, he believing himself the owner of the world and all its wealth.

He had had the initial lesion of syphilis fifteen years before. His history subsequent to admission was that of general paralysis, and, after admission, slow decline, with occasional intermissions, when he would improve only to lose more ground when the decline began again. On the day before his death he had an epileptic convulsion, and on the day of his death two more, the last one proving fatal.

The relationship between cerebral syphilis and general paralysis is hard to establish, because of the unreliability of statistics (Gowers); but Dr. C. J. Folsom[1] believes that the relationship is proven to be not accidental, for two-thirds of all general paralytics are syphilitics as well. Dr. Folsom does not regard it as a stage of syphilis, nor amenable to syphilitic treatment. Dr. S. Weir Mitchell believes in the relationship, and, to a certain extent, in the curability of general paralysis by syphilitic treatment. In a recent number of the *Journal of Nervous and Mental Disease* is an abstract of a paper by Dr. Cuylits, of France, in which the author mentions three theories concerning the relationship between syphilis and general paralysis, viz.: (1) that general paralysis always has syphilis as a cause; (2) that syphilis never causes general paralysis; and (3) that syphilis exercises some influence upon its production, whether as a determining or as an occasional cause. Another view is, that general paralysis indirectly predisposes to syphilis. The general paralytic during the stage of excitement that precedes the development of the malady gives way to every kind of excess, and is particularly liable to syphilis. This important question is now before alienists and neurologists, and we await developments that will clear up the pathology of both diseases, and establish the true relationship between them. I would say that I am convinced of the very close kinship of these diseases, and regard general paralysis as due to syphilis in at least eighty per cent. of all cases.

The few cases which I have reported represent the heterogeneousness of nervous syphilis, and while it may be admitted that there are no symptoms which are really pathognomonic of cerebral syphilis, and which will enable us at all times to diagnose it, yet it may be maintained that when we consider a case as a whole, observing the symptoms from their inception, how they begin their course, how they are associated, yet dissimilar, and how they end, there is often good reason for a diagnosis of cerebral syphilis. Sometimes, when we are even then in doubt, if we will but apply the therapeutic test of anti-syphilitic treatment, we can clear up all the doubts.

[1] Association of American Physicians, 1889.

A REPORT OF ONE HUNDRED SINGLE MAJOR AMPUTATIONS PERFORMED AT ST. LUKE'S HOSPITAL, SOUTH BETHLEHEM, PA.

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THOSE interested in the rapid advance of surgery will certainly read with interest and perhaps with instruction the following simple statistical collection of amputations performed according to modern methods. The one hundred cases which I wish to report are the sum total of all the single, major amputations performed in St. Luke's Hospital between January 1, 1888, and October 19, 1890.

Before giving the statistics, it may be of interest, especially to young hospital surgeons, and to those who have not had the advantage of hospital experience, to be told in a few words by what means we get results which are certainly flattering. Therefore, I will describe as concisely as possible an ordinary "everyday" case requiring amputation. As will be seen further on, ninety-three of these cases were due to some accident—in almost every case a railroad injury. The case generally has been injured from four to ten hours previously, and has been lying in a crowded railroad station before being taken to the South Bethlehem depot, where a single dressing is hurriedly applied. The injured person is then carried in five minutes by the ambulance to the hospital. On his arrival he is immediately placed on the operating table, and his clothes, as far as practicable, removed.

If he is badly shocked, he is left with the nurses, who surround him with hot cans and, at the same time, stimulate him either by the mouth or hypodermically. Here let me say, that we know of no more effectual stimulant than what is called in the hospital "strong medicine," the formula for it being the following:

℞.—Tincture of digitalis . . . . 5 minims.
Aromatic spirit of ammonia } of each 10 "
Compound spirit of lavender }

This is given as often as the condition of the patient may indicate.

It is very unusual for us to amputate while the patient is in a condition of shock, although two of our deaths occurred during shock. When the patient is in the proper condition, he is anæsthetized by one assistant, while the other pays the strictest attention to the injured part. First, turpentine is freely used to remove the grease, etc., which in so many cases literally covers the wound and adjoining skin. The condemned part is thoroughly douched with a 1-to-1000 solution of bichloride of mercury and wrapped in a wet bichloride towel. After this, a large area is lathered with warm water and green soap, and shaved. Then the parts are scrubbed, first with alcohol, and, finally, 1-to-1000 bichloride solution. While these preparations are going on the nurses are attending to the sterilization of the instruments, dressings, etc. It is hardly necessary to say that hands, sponges, in fact, everything in the slightest way connected with the operation, must be immaculate.

By means of elevation and an Esmarch bandage, the limb is made bloodless. Here let me say, that many of our cases have had great damage done to the tissues, when they arrive, by strings or knotted handkerchiefs very roughly applied. This damage has been much less since the railroad men, and especially those of the Lehigh Valley Railroad, received instructions in applying tourniquets, etc., by Dr. Estes in one or two public meetings.

As to the different methods of operating, we never transfix our flaps. Skin-flaps are invariably used, and in all cases, except in a few amputations of the forearm and lower third of the leg, the antero-posterior flap is the one selected. In the latter situation we have been unusually successful with lateral skin flaps, and by means of them drainage is always assured without a counter-opening. After the bone or bones are sawn through, the next most important thing is to be sure that all bleeding vessels are ligated. Particular stress should be laid on checking hæmorrhage, as it is too often hurriedly passed over. Take a little more time, and either twist or ligate everything, even the smaller muscular branches, which may be seen oozing. Owing to great care in this particular, we rarely have any bleeding when the Esmarch is removed, unless it be slight oozing from the end of the bone.

After the edges of the bone have been trimmed and the nerves cut short, the wound is thoroughly douched with 1-to-1000 bichloride solution. Next, two or three deep silver sutures are passed perpendicularly to the long axis of the bone through the cut muscles. This is particularly useful in thigh amputations; it prevents to a certain extent retraction of the muscles, and in this way gives a more rounded and useful stump. The wires are fastened by means of small wooden pegs. Drainage being provided for by means of one long or two short rubber-tubes, the line of incision is closed with interrupted silk and continuous catgut sutures. The line of incision is now covered with gutta-percha protective, which has been sprinkled with iodoform. The regular Lister dressing is then applied, *i. e.*, iodoform and bichloride gauze, and the whole is covered by one or two carbolized jute pads.

The patient is now carried to the ward, where hot cans are applied, and an order is given for him to have several doses (one-half ounce each) of black coffee as soon as he can swallow.

The primary dressing is allowed to remain for nine or ten days, unless there should be a rise of temperature or oozing, when the wound is immediately re-dressed. The sutures and tubes are removed, as a rule, between the sixth and the tenth day. If there is any gaping of the wound, it can generally be overcome by adhesive strips and tight bandaging.

I will now give in figures the results of all these apparently small, but yet most valuable, suggestions. In the one hundred cases reported there were only seven deaths following amputation, or a percentage of ninety-three recoveries. Two of the seven fatal cases were operated upon during shock. The five other cases died from exhaustion, following loss of blood which had previously taken place. The total number of days spent in the hospital by the ninety-three cases which recovered was 2115; average number of days for each patient 22.6. Seven amputations were for disease, with no deaths.

Amputation of the forearm, lower third, antero-posterior flaps	13
" " " upper " " " "	3
" " " middle " " " "	4
Deaths none. Total	20
Amputation of the arm, upper third, antero-posterior flaps	1
" " " lower " " " "	4
Deaths none. Total	5
Amputation of the thigh (long anterior, short post. flaps), lower third	13
Amputation of the thigh (long anterior, short post. flaps), middle third	8
Amputation of the thigh (long anterior, short post. flaps), upper third	3
Deaths 5. Total	24
Amputation of the leg, lower third, lateral flaps . . .	9
" " " " " anterior-posterior flaps	15
" " " middle " " " "	8
" " " upper " " " "	4
" " " " " long " "	2
Deaths 1. Total	38
Amputation (Syme's) of the foot	4
" (Chopart's) of the foot	1
" of the shoulder-joint	4
" " knee-joint	3
" " hip-joint (Dieffenbach's) . . .	1
Deaths 1. Total	13
Sum total of all cases	100
" " " deaths	7

Besides these single major amputations, the following synchronous amputations were performed:

Double synchronous major amputations	10	Deaths	3
Triple " " "	2	"	0
	12		3

OBSERVATIONS ON THE USE OF KOCH'S LYMPH IN SIXTEEN CHILDREN.

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AT the present writing I have employed Koch's lymph in seventeen cases. Sixteen of these cases were children of various ages, from nineteen months to sixteen years. These sixteen cases form the basis of this report. Two of them are under observation at the New York Infant Asylum, the others at the St. Joseph's Orphan Asylum. One decided advantage of treatment at the latter institution is due to the circumstance that the children will remain under surveillance for a long time, and that the developments of the lymph-treatment are thus reasonably sure to be seen. In ordinary hospitals, patients generally remain but a short time, and their subsequent history is often entirely a matter of speculation. Treatment by Koch's lymph is of such recent origin, and some of its results are so surprising, that for some time to come every case will be of more or less interest. But after temporary manifestations shall have been studied on a sufficiently large scale, then its more lasting effects, if it has any, will demand our attention. Preliminary notes on eight of these cases were published in THE MEDICAL NEWS of January 3, 1891.

A few words as to the selection of new cases are in place here. I have not selected any patients with readily demonstrable phthisis. The lymph has been employed by others in hundreds of such cases. That they show a febrile reaction after inoculation is now known. Whether they can be cured remains to be seen. But there is a large class of cases that are merely "suspicious." Strumous children, strongly tainted by heredity and predisposed by early environment, but without signs of already existing consumption, form no mean proportion of the inmates of many orphan asylums and similar institutions. Now, if the Koch fluid is really a sure test for tuberculosis of all kinds, then children that react are already tuberculous, while those without reaction should be considered free from the actual disease. There ought to be few, if any, exceptions to the proper working of such a rule if the doctrine of Koch is to stand. Cases with merely premonitory manifestations, even if thus shown to be already affected, should likewise be more amenable to treatment than those of a more positive and advanced kind.

In a general way, I have found that during the period of febrile reaction the children are certainly sick. But even with a temperature of nearly 106° F., and a correspondingly rapid pulse-rate and respiration, they seem more alert, less profoundly affected, than in any morbid state known to me which is accompanied by similar constitutional disturbances. It is true the pulse is at times quite feeble, but I have not yet seen anything approaching dangerous collapse. Severe headache appears to be the most common symptom, and next to that the development of cough. An exanthem resembling scarlatina or measles, and conjunctival injection have been noticed several times, but vomiting has been infrequent, and diarrhœa has not been complained of.

Children appear to bear the lymph well enough, and tolerance to increasing doses is seen in them just as in adults. They also recover from the prostration incident to reaction in a surprisingly short time.

For the present I have adopted the rule to give at the first inoculation 0.00025 gramme of the fluid, even in children more than ten years old. The reinoculations are increased to 0.0005 gramme, or even 0.001 gramme, according to the intensity of reaction. The only other general observation which I wish now to record, is that the febrile reaction may be postponed for twelve or even eighteen hours, and that it may last for two entire days.

The following brief notes of the cases will serve to illustrate these remarks:

CASE I. (*Of previous report.*) *Strong hereditary predisposition to phthisis.*

December 30. Sixth inoculation of 0.003 gramme. Temperature rose to 101.8° F.

January 2. Seventh inoculation of 0.004 gramme at noon. In nine hours the temperature was up to 102.4° F., and at 11 P.M. it was 103.4° F. Intense headache.

3d. Slight cough has developed. Temperature rose to 101° F. in afternoon, but subsided to 99° F. by 9 P.M.

5th. Eighth injection of 0.0045 gramme. To-day for first time fine crepitant râles are heard over left, upper posterior part of chest. Painful redness at site of last injection.

6th. Redness fading, very little local pain left.

8th. Her only sister having just died of phthisis, no injection was made, although temperature was normal.

9th. Ninth injection of 0.005 gramme. Reaction to 100.4° F.

10th. A few râles (finely crackling) heard on deep respiration in front on left side at apex.

11th. Temperature 98.4° F. in morning. Tenth inoculation of 0.006 gramme. Temperature rose to 100.4 F.

12th. To-day temperature remained almost stationary at 100.5° F. Her appetite is at present better than before treatment was begun.

CASE II. (*Of previous report.*) *Ozæna scrofulosa, and lymphadenitis of neck.*

December 30. Sixth injection of 0.003 gramme. Temperature rose to 101° F.

January 2, 4, and 6. Injections up to 0.005 gramme. The cough, which was so conspicuous a feature after the first few injections, is much less now. On the right side of the neck the glands (excepting one the size of a small walnut) are scarcely appreciable to the touch. On the left side they are smaller and harder than before, but still quite large. Reaction to 103° F.

8th. 0.0055 gramme injected. Very slight reaction. Temperature 99.8° F. Ulcers healing under crust.

9th. Injection of 0.006 gramme. Reaction to 102° F. Pain in back. Nose looks swollen; puffy redness of cheeks.

11th. Injection of 0.007 gramme. Temperature rose to 103° from 98.4° F. in the morning. Felt "sick all over" several hours after injection.

12th. Erysipeloid swelling about nose—*i. e.*, site of ulceration. All glands rather smaller; they show no local tenderness or other signs of inflammatory reaction.

CASE III. (*Of previous report.*) *Hip-joint disease.*—Re-inoculations December 30th, January 2d, 4th, 7th, and 10th, up to 0.004 gramme. On January 2d, temperature rose to 104.4° F. in ten hours after injection. The joint was more sensitive to manipulation after first few injections, is less so now. There is greater mobility of joint. The reactions are much less severe now, temperature only rises to about 100.5° F.

CASE IV. (*Of previous report.*) *Hip-joint disease.*—Only two inoculation made, 0.002 gramme each on December 30th and January 3d, as the temperature has not returned to the normal point, fluctuating between 99° F. and 100.4° F. Several large glands, only slightly tender, are found deep in the iliac fossa on the affected side. There is a slight bedsore. Child in extension apparatus.

CASE V. (*Of previous report.*) *Tubercular glands in neck and submaxillary region. Scrofulous affection of eyelids and nose.*

December 30. Injection of 0.001 gramme. Temperature rose to 102.4° F.

January 2. Injection of 0.0015 gramme. Temperature 98.4° F. at time. In ten hours it rose to 102.6° F. Desquamation of skin in shreds, exactly as in scarlet fever.

4th. Injection of 0.002 gramme. Slight reaction to 100° F.

5th. Temperature rose to 101° F. this P. M.—*i. e.*, late or postponed reaction.

6th. Injection of 0.002 gramme. Highest temperature 100.8° F.

7th. Temperature 100.2° F. in the morning, 99° F. P. M. The râles at apices less distinct to-day, but breathing harsh, expiration prolonged. Little cough.

8th. Injection of 0.003 gramme.

10th. To-day there are moist crepitant râles, mostly small over the entire left side, both in front and behind. This is a new symptom.

11th. Temperature 97.6° at 9 A. M. Injection of 0.0035 gramme at 11.30 A. M. At 7 P. M. temperature 103.6° F.; at 9 P. M. 104.2° F. Very nervous and restless at night. On leaving her bed was noticed to walk with decidedly staggering gait.

12th. Pulse small, 160 beats per minute. Conjunctivæ injected. Râles the same on left side, none on the right side. Temperature fell to 101.6° F., but rose again this P. M. to 103.0° F. This girl was very much emaciated before treatment, but is now gaining flesh. Appetite fair.

CASE VI. (*Of previous report.*) *Incipient phthisis.*

January 1. Fewer râles. Expiration harsh and prolonged at apices. More dulness on right side.

2d. Injection of 0.003 gramme.

3d. Eruption like measles all over body, except legs. Some urticaria-like wheals. Temperature rose from normal to 104.8° F. in eight hours.

4th. Fewer râles. Rash fading.

5th. Still some rash. Injection of 0.0035 gramme. Followed by violent subjective symptoms. Intense headache, screaming with pain. Constant dry cough. Vomiting. In three hours the temperature went up to 100.8° F. At 6 P.M. it was 101.4° F.; at 8 P.M., 104.4° F.; at 9 P.M., 105.8° F.; at 10.30 P.M., 105.2° F.; at midnight, 104.2° F.

6th. Temperature gradually subsiding.

7th. Temperature still around 100° F.

8th. Temperature normal this A.M. Injection of 0.004 gramme. Temperature again quickly rose to 103° F. in three hours. At 5 P.M., 104° F.; at 6 P.M., 105.4° F.; at 7 P.M., 105.6° F.; at 9 P.M., 105.8°; at 11 P.M., 105.2° F.; at midnight, 105° F.

9th. Temperature 100.6° F., to 101° F. Pulse weak and rapid. Backache, headache. No appetite.

10th. Fine crackling râles all over right side, especially behind. Also more râles on left side—*i. e.*, extension of pulmonary process. Cough dry. Very slight expectoration. Highest temperature 100° F.

11th. Temperature normal this A.M. Injection of 0.0045 gramme. Temperature rose to 104.6° F., but no violent symptoms appeared.

12th. Temperature down to 98.4° F. No afternoon rise. Fewer râles. Less cough.

In Case VII. the inoculations were discontinued, as there was no further reaction after sufficiently large doses had been reached. According to Koch's doctrine, the condition of this little girl should, therefore, be regarded as at present "non-tubercular." This would accord with the fact previously noted, of her recovery from an attack of meningitis closely simulating the tubercular variety. This child has certainly not been made worse by the inoculations. Her general condition remains entirely unchanged. In the present stage of experience negative evidence may be just as instructive as that of a positive nature.

CASE VIII.[1] *Phthisical thorax; enlarged cervical glands; "suspicious" breathing at apices.*—Girl,

[1] Cases VIII. to XIV., inclusive, are the new cases at the St. Joseph's Asylum. Case VIII. of previous report is Case XV. of this one. Case IX. of previous report, being an adult case, is omitted, and Case XVI. is the new case at the New York Infant Asylum.

aged twelve years. Family history good. Is thin and delicate; very narrow and flat chest. The breathing at apices is harsh, but there are no râles of any kind. No cough. Chains of enlarged glands of neck, running down to supraclavicular region.

January 5. Injection of 0.00025 gramme. In six hours temperature rose to 101° F.

6th. A.M., temperature, 98.8° F.; 4 P.M., 102° F.

7th Injection of 0.0005 gramme. Temperature rose to 101.4° F. Scarlatinoid appeared over entire body.

8th. Rash present.

9th. Rash fading. Slight cough.

10th. Still a remnant of rash. Injection of 0.001 gramme. Temperature 99.4° F. only.

11th. Temperature to-day higher than yesterday, up to 101° F.—*i. e.*, postponed reaction. Rash has reappeared, but only on trunk.

12th. Glands in supraclavicular region smaller. No râles, but slight cough continues.

CASE IX. *Scrofulous ulceration; fœtid otorrhœa; cervical lymphadenitis.* —Girl, aged eight years. Lungs negative, no cough. Corneal opacities and various scars indicate former morbid processes. At present only slight ulceration of lip and nose. Chains of enlarged glands on either side of neck.

January 5. Injection of 0.00025 gramme. Temperature rose from 98.4° to 99.4° F.

6th. Injection of 0.0005 gramme. Temperature rose to 100° F.

8th. Injection of 0.00055 gramme.

9th. Injection of 0.001 gramme.

10th. Injection of 0.0015 gramme.

11th. Injection of 0.002 gramme. Temperature never rose above 102.8° F.

12th. Temperature 97.4° in morning. Corneal opacities are unmistakably less dense, otherwise no change. Scarcely any subjective symptoms.

CASE X. *Winter cough; suspicious breathing at right apex.*—Girl, aged eleven years. Has coughed every winter for a number of years. Right supraclavicular space retracted, expiration harsh and prolonged over this region. No râles. Small eater. Slight glandular chains at neck.

January 5. Injection of 0.00025 gramme. Cough increased; pain in chest. In six hours temperature rose to 101° F.

6th. Temperature at 11 A.M., 100° F.; at 4 P.M., 100.6° F.

7th. Injection of 0.0005 gramme. Temperature not above 100° F.

8th. Temperature 100.6° F.—*i. e.*, slight late reaction.

9th. Injection of 0.001 gramme. Temperature rose to 100.8° F. only.

10th. Has vomited a number of times. On left side below scapular spine râles have developed.

11th. To-day there are râles on right side also, near sternum.

12th. Injection of 0.002 gramme. Temperature rose from 98° to 99.4° F.

CASE XI. *Suspicious apices; hereditary predisposition to phthisis.*—Girl, aged fifteen years. Parents both died of consumption. One sister "delicate." Has coughed for eight years. Small eater. Paralytic thorax. Slight retraction at apices. Supraclavicular spaces sunken in during inspiration. Very few râles, apparently bronchitic. Pain over chest.

January 5. Injection of 0.00025 gramme. Temperature did not rise above 99.4° F.

6th. Temperature remained almost stationary at 100° F. all day.

7th. Injection of 0.0005 gramme.

8th. Injection of 0.001 gramme.

9th. Injection of 0.002 gramme.

11th. Injection of 0.0025 gramme.

12th. Injection of 0 003 gramme. A few râles are now heard, but there has been no marked febrile reaction, the highest temperature having been only 100.8° F.

CASE XII. *Aggravated pigeon-breast; ulcerative processes of lips and eyes; large cervical glands.*—Boy, aged ten years. Thorax deformed into a pronounced pigeon-breast. Thin, pale, delicate-looking. Lungs negative. No cough. Glands in left side of neck quite large.

January 5. Injection of 0.00025 gramme. Temperature rose to 100° F. in four hours. Nausea, pain in stomach, great malaise.

7th. Injection of 0.0005 gramme.

8th. Injection of 0.001 gramme.

9th. Injection of 0.002 gramme.

10th. Injection of 0.003 gramme. No noteworthy febrile reaction, highest temperature 100.4° F.; cough has come on, but no râles are heard.

CASE XIII. *Scrofulous ulcerations; lymphadenitis.* —Boy aged six years. Ulcerative processes of neck, chin, lips, and nose. All glands enlarged. Largest about the size of a cherry. Lungs negative.

January 9. Injection of 0.00025 gramme.

10th. Injection of 0.005 gramme.

11th. Injection of 0.001 gramme. Some of the ulcers covered with crusts. Some eczematous patches are now dry. Diffuse redness about them.

12th. Injection of 0.002 gramme. Redness noticed yesterday subsiding, Only slight febrile reaction to 100.6° F. so far. No cough.

CASE XIV. *Suspicious apices; phthisical thorax.* —Boy, aged thirteen years, brother of Case IX. Very flat chest. Retraction of supra- and infraclavicular spaces on both sides. Harsh apex-breathing. No cough. No râles. Superficial ulcerations about nose and eyes. Submaxillary lymph glands in left side almond size.

January 11. Injection of 0.00025 gramme. No reaction.

12th. Injection of 0.00055 gramme. Reaction to 101.8° F.

CASE XV. (*This is Case VIII. of previous report.*) *Tubercular lymphadenitis of neck.*

December 29. Temperature rose to 103° F. after injection of 0.0005 gramme.

31st. Injection of 0.001 gramme, with rise to 102.6° F. Cicatrix quite red. Child bright and playful; sleeps well.

January 2. Injection of 0.00175 gramme at 7 P.M Reacted to 102.6° F. by 6 A.M.

4th. Scar looks better, less bulging, less red. Injection of 0.0002 gramme, not followed by reaction.

5th. Temperature normal. Cicatrix no longer indurated. Redness almost gone.

8th. Injection of 0.002 gramme. No reaction.

10th. Scar has diminished fully one-third in thickness. Other glands smaller. Child seems well.

12th. Injection of 0.002 gramme.

CASE XVI. "*White swelling*" *of the knee.*—Child, aged two years, has had plaster bandage immobilizing knee-joint for weeks without benefit.

January 12. Injection of 0.00025 gramme. Moderate reaction.

CLINICAL MEMORANDUM.

SURGICAL.

Position and Fomentations in the Treatment of Strangulated Hernia.—On the morning of November 21, 1890, I was called to see a German woman, married, aged forty-two years, suffering from strangulated omental femoral hernia. The tumor was the size of an almond, very tender, and unyielding to the touch.

The hernia made its appearance at 4 P. M. on the previous day. While the patient was in a stooping position, one foot suddenly slipped from a board, when she felt a severe and lancinating pain in the region of the femoral ring.

After making an unsuccessful attempt at reduction by taxis under chloroform, I decided to try conservative treatment rather than hazard an operation with the very unfavorable surroundings.

Consequently, I had the foot of her bed elevated about fourteen inches, and ordered tobacco fomentations, as hot as could be comfortably borne, to be constantly applied to the tumor. I gave the patient ¼ grain morphine and $\frac{1}{120}$ grain atropine, hypodermically, and left her. On returning in six hours I found the tumor smaller, more yielding, and less tender to the touch.

Forty-eight hours after first seeing the patient the tumor had entirely disappeared, without any untoward symptoms except some nausea caused by the tobacco fomentations and morphine.

I have had excellent results from the same plan of treatment in severe renal colic that would not yield to morphine. In the use of tobacco for the relief of such cases as herein noted, it must be applied in quantities sufficient to secure its physiological effects. My custom is to use one-half pound of good smoking tobacco for each fomentation.

W. D. JONES, M.D.

RISINGS, NEBRASKA.

MEDICAL PROGRESS.

Ointment for Chilblains.—The *Weekly Medical Review* quotes the following formula for an ointment used by DR. MORROW in the treatment of chilblains:

R.—Carbolic acid . . .	1 drachm.
Tincture of iodine . .	2 drachms.
Tannic acid . . .	1 drachm.
Simple cerate . . .	3 ounces.—M.

Apply to the affected parts two or three times daily.

Operative Treatment of Tubercular Peritonitis.—The Berlin correspondent of the *Lancet* (December 20, 1890) writes that at a recent meeting of the Public Health Society, FRÄNKEL exhibited a young man who had been cured of tubercular peritonitis by abdominal section. The patient had come under Dr. Fränkel's care some months previously, and was then extremely reduced, and had ascites, manifestly due to tuberculosis. A median abdominal section was made, and the ascitic fluid evacuated. As a result, the patient, when exhibited, looked well and strong, the wound had united, and there was no abdominal tenderness or other symptom of disease.

A Successful Pericardiotomy.—According to the *St. Louis Medical and Surgical Journal*, January, 1891, STOLL, of Warsaw, has reported a successful operation for purulent pericarditis. The patient was an exhausted and emaciated soldier, twenty-one years old. After the sternum was trephined the pericardium was freely opened at the level of the second intercostal space. Two months after the operation, examination showed that the pericardial sac was completely obliterated. This is said to be the fourth successful case on record.

Auscultatory Percussion in the Diagnosis of Abdomina Tumors.—ZUELZER (*Centralblatt f. d. Physiologie und Pathologie der Harn und Sexual Organe*) recommends combined auscultation and percussion in the examination of the kidneys and of abdominal tumors covered by a thick layer of muscle. Differences of sound incapable of recognition by ordinary percussion can thus be determined. A metallic vibrating sound is given by organs containing air such as the lungs and intestines. If we percuss over a solid organ, such as the heart and liver, or over tumors, or if we percuss below the solid mass and auscultate at the upper margin, marked interference with the sound-conduction is appreciated. In this manner we can map out the borders of organs or tumors with accuracy. To detect the boundaries of the bladder when filled with urine, the stethoscope should be placed over the intestines above the bladder during percussion.

In examination of the kidneys it is necessary to determine the position of the external and inferior borders. For this purpose the intestines should be as empty as possible. The stethoscope is placed upon the anterior abdominal wall, and percussion practised over the corresponding renal area, while the patient bends slightly forward. Percussion should be commenced at the level of the fifth or sixth lumbar vertebra over the spinous process, and is then continued outward. Over the bone the resonance is clear. Where the kidney is covered by the muscles of the back the percussion-dulness is most intense, the sound becoming clear when the percussion is carried beyond the borders of the organ.—*Journal of Cutaneous and Genito-urinary Diseases*, January, 1891.

Irrigation of the Colon in Dysentery.—DR. PETR S. KORYTIN (*Vratch*, No. 42, 1891) details his experience in the treatment of dysentery by the use of large enemata. Fifteen consecutive cases were treated by this method, of which but one died, the remainder making good recoveries. Six pints of water, at a temperature of 102° F., were used for each enema. The injected fluid was

usually retained for from five to ten minutes. In three catarrhal cases simple tap-water was used. In the remaining cases from ten grains to one drachm of crystalline carbolic acid were added to each enema, but the effects of the latter did not differ in any way from those of the pure-water enemata. The treatment caused a rapid decrease of abdominal distention and pain, tenesmus, and frequency of stools. Appetite and sleep soon returned, and the stools quickly became more solid, and free from offensive odor, as well as blood, mucus, and shreds, while the temperature fell to normal. In catarrhal cases improvement was more rapid than in diphtheritic cases. The good results are attributed by Dr. Korytin simply to the thorough cleansing of the large intestine.—*St. Louis Medical and Surgical Journal*, January, 1891.

The Treatment of Tinea Tonsurans.—In the treatment of this troublesome affection CARRERE, in an inaugural thesis, details the methods which have been practised at the Hôpital St. Louis by various physicians in attendance.

That of BAZIN consists in the removal of the hair of the affected part, in the application of lotions of corrosive sublimate of the strength of 1 to 250 and the employment of a parasiticide ointment composed of the acetate of copper, the iodide of sulphur or of turpeth mineral.

The treatment of VIDAL consists in rubbing of the affected part with the oil of turpentine and painting with tincture of iodine. Second, in the application to the scalp of iodized vaseline in the strength of 4 to 100, covering the head with a piece of rubber tissue or other impermeable substance.

BESNIER removes the hair for from 6 to 8 millimetres beyond the spot which is affected, and aids in the removal of the parasite by the use of a curette. After this he orders daily washings with soap, tar, salicylic acid or sulphur. Finally he applies a piece of mercury plaster over the part which is diseased.

HALLOPEAU orders the head to be washed with green soap every morning, and afterward that the following prescription should be rubbed into the affected area.

℞.—Spirit of camphor . . 6 ounces.
Spirit of turpentine . . 6 drachms.
Ammonia water . . . 1½ "

Half an hour after this iodized vaseline in the strength of 1 to 100 should be applied, and, as with the treatment of Vidal, a caoutchouc covering should be placed on the head. Another application of the iodized ointment should be made at night.

UNNA, of Hamburg, employs the following ointment under these circumstances:

℞.—Salicylic acid . . . . 30 grains.
Chrysarobin . . . . 75 "
Ichthyol . . . . . 75 "
Simple cerate . . . . 5 ounces.

This is to be applied to the head and a rubber or other impermeable cap placed upon the patient. After using this ointment for four days applications of 5-per-cent. ichthyol ointment should be employed, and at the end of the week this line of treatment should be followed for a second time.

QUINQUAND directs that the head shall be washed with soap and hot water, and the following lotion be applied with friction:

℞.—Biniodide of mercury . . 2½ grains.
Bichloride of mercury . . 15 "

These are to be thoroughly mixed in a mortar and dissolved in ½ ounce alcohol (90 per cent.), and distilled water 6 ounces. The part which is affected should be energetically scraped with a curette after the employment of this lotion, and a plaster made of biniodide of mercury, 2½ grains; bichloride of mercury, 15 grains, and simple cerate, 6 ounces, should be applied. After this application is discontinued the head is once more washed with soap, and frictions are again made with the lotion which has been named. This course of treatment is to be repeated until the cure is complete.

In some cases the following ointment has been found to act equally well with the mercurial ointment just named: chrysophanic acid, salicylic acid and boric acid, of each 30 grains.

Treatment of Acute Tonsillitis.—SURGEON HEHIR (*Indian Medical Gazette*, November, 1890), in cases of acute tonsillitis recommends the administration of pilocarpine to relieve the distress caused by the accumulation of tenacious pharyngeal mucous. One-eighth of a grain in a teaspoonful of water every two hours, or ⅛ grain hypodermically every four hours, until slight salivation is produced, is sufficient. Locally he uses repeated poultices and constant steaming by means of boiling water near the patient's head. Internally, tartar emetic in doses of $\frac{1}{16}$ grain to adults every two hours has given him more uniformly good results than any other drug, not excepting sodium salicylate. If any depression follows the use of the tartar emetic, which is unusual, ammonium carbonate or strophanthus may be given. Of stimulants he thinks port wine the best and believes that it has some local beneficial action upon the inflamed tonsils. Guaiac mixture is sometimes very useful in relieving the shooting pain often complained of during the act of swallowing. It is usually good practice to begin treatment by the administration of a mercurial followed by a saline purge. Dr. Hehir has repeatedly seen marked relief follow a simple puncture or small incision of the tonsil, and this should be done whenever the gland is greatly swollen. It is much preferable to the use of leeches in the submaxillary region. He believes that strong astringent gargles are of very little use during the acute stage, but that tepid antiseptic gargles may be beneficial.

Ointment for the Chloasma of Pregnancy.—

℞.—White precipitate . . . 1½ grains.
Purified oxide of zinc . . 4 "
Cocoa butter } of each . . 1½ ounces.
Castor oil }
Essence of rose, a sufficient quantity.

Apply this with gentle friction twice a day to the pigmented spots. In the morning it may be well to wash the parts with hot water and to apply an ointment composed of

℞.—Kaolin } of each 2½ drachms.
Subcarbonate of bismuth }
Vaseline . . . . . 1½ ounces.

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SATURDAY, JANUARY 17, 1891.

VIRCHOW AND KOCH.

THERE is probably no one living whose opinions are listened to with the same respect as are those of Virchow, who has been so correctly called the "father of modern pathology." The statements of this eminent man are also particularly interesting when they concern the new method of treating tuberculosis, and become still more important when they seem in any way opposed to the almost ecstatic reports of the physicians who have used the mystic liquid in Germany and elsewhere.

The statements of Virchow, which are published in the *Extra* attached to this number of THE MEDICAL NEWS, show that a possibility exists of a sad curtailment of our hopes for the relief of the "white plague," and emphasize the fact that, do what we will, the mortality must go on unimpeded to a very great extent.

The fact that the bacilli greatly increase in numbers under the use of the anti-tubercular fluid has not only been noticed by Virchow, but by others, not the least of whom is Osler, of Baltimore. It would appear that about the Koch method there is being drawn, as with all new remedies when on trial, a constricting band of limitation which may perhaps only serve to outline its uses, or become still more tense, and destroy its life.

THE MEDICAL NEWS has done much toward keeping the profession in America in touch with this entire subject by reason of its several cablegrams, the abstracts from foreign journals, and the original studies made in the great cities of America which it has published and it can assure them of a continued activity and foresight which cannot fail to accrue to their benefit.

CURRENT LITERATURE.

WITH this issue of THE MEDICAL NEWS a new departure for the benefit of our readers is instituted. In addition to the Progress columns, which contain only those short articles which are intended for hurried reading, and general information, we will frequently publish more lengthy condensations of current literature taken from foreign journals and so translated as to contain all the important portions of a paper without the laborious verbosity of the French and German writers. Many such attempts have been made, but in instances not a few the material so published has been so wretchedly abstracted, and so lacking in evidences of judgment as to the essential portions of a paper as to be useless. The existence of an editorial page is often an excuse for foisting upon a subscriber much useless material and for this reason the pages usually so employed in the past in THE NEWS will be taken up with notes on current literature, unless editorial matter is of sufficient interest or value to displace them. By this new move THE MEDICAL NEWS will always be found full of value to everyone and will embrace not only topics of fleeting interest but become valuable as a copious work of reference.

Large Bequests to Charity.—The will of Mrs. Elizabeth Fogg, of New York, gives about half a million of dollars to the hospitals and asylums of that city, out of an estate estimated to be worth $2,000,000.

By the will of the late D. B. Fayerweather, five hospitals of the same city fall heir to about $100,000.

A Chinese Hospital in Brooklyn.—The articles of incorporation have been filed at Albany for a Chinese Hospital Association to be located at Brooklyn. Clergymen and physicians of that city chiefly constitute the board of directors. It will be exclusively for the use of Chinamen, and it is not expected to receive contagious cases.

The Hospital at Atlanta, Georgia.—On December 28th, the corner-stone of the Henry W. Grady Hospital was laid at Atlanta, Georgia, with elaborate ceremonies. The day was the anniversary of the death of Mr. Grady, and was purposely selected as a proper time for these exercises.

CURRENT LITERATURE.

SATURDAY, JANUARY 17, 1891.

CHLOROFORM IN TRACHEOTOMY.

IN a paper advocating the more extensive employment of chloroform in tracheotomy in children, based upon a series of eighty-seven observations, P. GEFFRIER makes the statement that whilst in England and America the administration of chloroform to children operated upon for croup has rapidly grown in favor, and is recommended in the standard text-books, only in exceptional cases is it so employed in France. He regards this as still more remarkable from the fact, that as long ago as 1883 Dr. Gouguenheim, in a paper read before the Surgical Society, stated that in tracheotomy in children, as well as in adults, chloroform is of service; that it does not complicate the operation or render the prognosis more serious; but, on the contrary, that under its use respiration frequently becomes more free and regular, and the appearance of the patient such as to give rise to the hope that the operation will not be necessary. Further, Dr. Gouguenheim thought that chloroform could be used in the paroxysms of suffocation in croup in order to gain time, and in this way render the necessity for tracheotomy less frequent. On the authority of these statements of Gouguenheim, Dr. Geffrier has employed chloroform anæsthesia in all of his cases of tracheotomy since 1887, observing the precaution to administer the chloroform himself.

He places about three grammes of the anæsthetic upon a pad, which is rolled in a towel and held over the nose and mouth of the child, the head of which is less extended than at the time of the operation, as it has been found that prolonged extension gives rise to marked disturbance of respiration. In a very few cases this amount of chloroform was sufficient, but usually two grammes more were required, and in some cases even four grammes, but rarely was more than this amount administered. A remarkable fact which he has noted is, that while in order to produce anæsthesia in ordinary operative cases from four to five minutes are required, in croup, as a rule, but one or two minutes suffice to produce complete anæsthesia.

In the larger number of Geffrier's cases (53 out of the 87) the chloroform was very well tolerated, the only unusual phenomenon observed being the occurrence of short respiratory pauses or periods of apnœa in about one-half of the cases at the commencement of the chloroformization. This condition, however, soon passed away, to be followed by regular and free respiration. Almost invariably consciousness returned at the close of the operation, owing to the small amount of the anæsthetic inhaled. Whenever there was delay in this reaction, tickling the larynx by a small feather passed through the canula instantly produced a reflex laryngeal cough, which resulted in the restoration of the respiratory function. In but 17 of the observations was the chloroform badly tolerated. In these cases there was more or less pronounced cyanosis with short, stertorous respiration, or even momentary arrest of respiration; and in 15 of the cases the operation was performed before complete anæsthesia was obtained. The following conclusions are reached by the author:

1. Chloroform is of undoubted service in tracheotomy in children.

2. It is not more dangerous in tracheotomy than in any other operation, provided that certain contra-indications are borne in mind.

3. The precautions to be observed are as follows:

(*a*) The operator should have prepared in advance, under his own observation, everything which may be needed during the operation.

(*b*) He himself should administer the chloroform, or have it administered by an experienced assistant, following with care the effects produced, and watching the respiration; if there be occasion, he should excite inspiratory movements by artificial respiration or by irritation of the skin (pinching, tickling).

(*c*) The inhalation of chloroform should be immediately stopped, and the operation rapidly performed if the condition of the respiration becomes disturbed. (Rapidly-increasing cyanosis: prolonged apnœa.)

4. As contra-indications to the employment of chloroform anæsthesia may be regarded:

(*a*) The appearance of progressive and complete asphyxia, and profound prostration due to the diphtheritic poison.

(*b*) An appearance of relative asphyxia decreasing in this order:

Marked cyanosis, without disturbance of expiration. Slight cyanosis, with disturbance of expiration.

As contra-indicating chloroform-anæsthesia should not be considered: Slight cyanosis without disturbance of respiration; the early age of the children (if tracheotomy is not contra-indicated by the age, the chloroform is not more so).

5. The chloroform appears to be rather better borne in cases in which respiration is established after one or more paroxysms of suffocation, than in cases in which it is established progressively without paroxysms.—*Revue de Chirurgie*, December 10, 1890.

TONSILLOTOMY AND HÆMORRHAGE.

DR. E. J. MOURE recommends for hypertrophy of the tonsils in children the removal of the organs by the tonsillotome when they are voluminous, jutting out between the faucial pillars, and impeding by their presence the entrance of air into the respiratory passages, and consequently presenting a serious obstacle to the development of the entire organism. In performing this operation, however, it is well to bear in mind the possibility of the occurrence of hæmorrhage, especially in children of the hæmorrhagic diathesis. If this complication occur, not only should gargles and applications be employed—preferably the latter (lemon juice, tannin, solution

of the perchloride of iron, alum, etc.)—but above all, the patients *should be prevented from sleeping during the hours immediately following the operation.* By observing this precaution, the swallowing of blood and the subsequent alarming vomiting of altered blood, accompanied with severe irritation of the gastric mucous membrane, will be avoided.

In the case of adults, Dr. Moure advocates the use of the thermo- or galvano-cautery, giving the preference to the former when it is possible to use it advantageously. He says: "With many of my *confrères* I have often practised tonsillotomy in the child and ignipuncture in both the adult and the child, and always the most perfect success has crowned my efforts. Very often I have reduced tonsils relatively voluminous in one or two sittings by using the thermo-cautery, and I avow that I have never seen patients who believed themselves cured, come to me demanding new treatment. Much more, I think that with the hot iron as much of the tonsil may be destroyed as is desirable, even behind the pillars, if that be necessary, which is not possible with the cutting instrument.

After performing the operation, he prescribes the following emollient and antiseptic gargle:

℞.—Bromide of sodium, Borate of sodium } of each 6 grammes.
Carbolic acid . . . 1 gramme.
Pure glycerin . . . 50 grammes.
Decoction of barley and marshmallow root . . 450 " —M.

This is to be taken during the day. The burned surface rapidly heals, usually without any complications. Occasionally on the separation of the eschar secondary hæmorrhage may occur, which can be controlled by astringent gargles and astringent applications.—*Revue de Laryngologie et d'Otologie et de Rhinologie*, December 15, 1890.

SPECIAL ARTICLES.

REPORT ON THE KOCH TREATMENT OF TUBERCULOSIS AT BERLIN.[1]

BY A. C. ABBOTT, M.D.,
ASSISTANT IN BACTERIOLOGY AND HYGIENE IN THE JOHNS HOPKINS HOSPITAL.

SOON after the publication of the article by Koch upon the effects on tuberculosis of the fluid discovered by him, came reports of the results of the treatment from many of the larger hospitals in Europe. The evidence was of such a nature as to render it important that steps be taken to give to our patients an opportunity to avail themselves of any benefit that might follow the employment of the agent in tuberculous troubles.

With this object in view the Board of Trustees of the Johns Hopkins Hospital decided to send me as their representative to Berlin; my instructions being to make every effort to study not only the clinical features of the method of treatment, but, if possible, to acquaint myself with the nature of the agent employed.

On the morning following my arrival in Berlin, there appeared in the daily papers the address of Minister v. Gossler, made in the Reichstag, on the preceding day. In this address it was stated that the composition of the agent discovered by Koch would be reserved as a government monopoly; not, however, for commercial purposes, but with the view to limiting its employment until its value was thoroughly established.

In a conversation which I had with Professor Koch himself, a short time subsequently, he said that his views were in accord with those of Minister v. Gossler, and he added that the reason for the secrecy was simply to confine the use of the material to the practice of competent observers until its value could be established. When this was accomplished, he hoped to publish a full account of his experiments, and of the technique employed in preparing the virus.

My time was given to the study of the clinical features of the treatment, and through the courtesy of Professors Leyden and Ewald, and Doctors Köhler, Westphal, and Klemper, I had all the advantages that one could wish.

From the cases that I saw in the Charité and Augusta hospitals I feel justified in concluding that the outlook for "surgical tuberculosis" is very favorable. In the lupus-cases particularly, one may say that a cure has been effected in some.

In cases of joint-tuberculosis the injections of the virus have not rarely been repeated until the systemic reaction practically ceased to appear, and still the local expression may have improved but slightly, or not at all. In one such case the joint-cavity was subsequently opened, and in it was found a mass of necrotic tissue containing tubercle bacilli. This tissue was free in the cavity, and had evidently been thrown off from a point on the wall of the joint which still presented the characteristics of tuberculous tissue.

In another case there was every reason to believe that the condition was identical with that of the joint to which I have just referred. At the operation, however, there was an absence of anything in the joint that would lead one to suspect the presence of necrotic tissue. But at one point on the cartilage was an old scar, evidently of tubercular origin, and it is not improbable that the irritation of and effusion into the joint may have resulted from the local reaction in this scar.

In joint-troubles of this character the best results may be expected from the action of the virus, combined with the treatment of the joint by the ordinary surgical measures.

[1] Abstract of remarks made to the Johns Hopkins Hospital Medical Society, January 5, 1891.

The employment of the agent in cases of laryngeal tuberculosis should be conducted with the greatest care, and the treatment should begin with even a smaller quantity of the agent than that ordinarily employed as the minimum dose for other diseases. The extreme congestion brought about in the tissues of the larynx as a result of the treatment is extremely dangerous, if not of a fatal nature.

As is well known, Koch has said positively that phthisical patients in whom the disease has slightly advanced can be cured by the systematic employment of the virus. In his experience such patients were, in a number of instances, pronounced cured after from four to six weeks. He claims further that patients in whose lungs cavities of limited extent exist may be very much improved, and indeed almost cured by this method.

I have not yet seen any of the cases which were reported as cured, though I have seen a number in which the tubercle bacilli were said to have disappeared from the sputum of the patients for longer or shorter periods of time. From my personal experience in the wards in which the pulmonary cases were being treated, I feel constrained to say that it is only with the greatest conservatism that one should express an opinion as to the result of the treatment. There is no doubt that many of these patients gave evidence of improvement, but for one to say positively that they were cured would, I believe, be, at present, a little premature.

The characteristic reaction of the tuberculous patients after injection of the agent begins to appear in from four to five hours after administration. As a rule, it is ushered in by a chill, which is soon followed by a rise of temperature, often to 104° or 105° F.; pains in the limbs; irritative cough; extreme lassitude; and not uncommonly vomiting. Less frequently a temporary icterus of a hæmatogenous nature has been observed, and not uncommonly there appears upon the breast and arms an exanthematous eruption closely resembling that of measles. The attack lasts usually from twelve to fifteen hours. Exceptionally a secondary, though less marked, rise of temperature is seen on the following day.

After the reaction has passed away, there is a conspicuous absence of anything indicating the acute attack through which the patient had passed but a few hours before.

The local reaction can, of course, be best seen in those cases in which the lesion is most superficial, and for this purpose lupus offers the most favorable field. In this group the selective affinity of the agent for tuberculous processes is astonishing. In a few hours after the injection, as the temperature rises, the lupus becomes reddened and swollen. This continues, until through the lupus-tissue there are spots of a brownish-red color. These spots, when sharply circumscribed and isolated, are not uncommonly surrounded by a pale zone, which is in turn surrounded by an area of intensely-congested tissue. The skin over the whole of the diseased area is tense, and from the ulcerating points a thin watery exudate usually escapes.

With the decline of the fever there is a diminution in the intensity of the local reaction, so that after two to three days the reddening and swelling have usually disappeared. The ulcerated spots and the parts from which there had been an exudation are now covered by a brown crust, and over the smoother portions of the diseased area small, loose, scaly patches may be seen.

It is important to observe that very small, isolated patches of lupus tissue, the presence of which may not previously have been observed, are frequently rendered apparent through the alterations which the agent effects.

Probably the most conspicuous feature in the action of the agent is its affinity for tuberculous tissue. Not uncommonly there appears after the first or second injection, hitherto unsuspected localized areas in the lungs which present physical signs not distinguishable from those accompanying small areas of tubercular infiltration.

In two cases which came to my notice I saw this result follow the injections. These patients were selected with great care as "control-cases." Their lungs were carefully examined, and from physical signs (no expectoration being present) tuberculosis was excluded. After the first injection there appeared in the apex of the right lung in the one, and in the apices of both lungs in the other, a condition which gave all the characteristic signs of incipient tubercular infiltration.

In certain cases in which there has been much loss of tissue, and in which the vessels of the lungs are exposed and their walls weakened, hæmorrhage is not an uncommon accompaniment of the intense congestion brought about in the vessels of the diseased area.

Of the rarer complications may be mentioned icterus of a hæmatogenous nature, temporary albuminuria, and diarrhœa in children.

To summarize then the conclusions which I was led to draw from the cases seen by me, it may be said:

(1) That the outlook in cases of surgical tuberculosis is good, particularly in those in which the disease is most superficially located.

(2) In the lung cases the outlook seems to be fair if the cases are treated sufficiently early. For advanced cases I think it would be premature to do more than speculate, in view of the existing evidence.

(3) The intestinal cases, so far as they have been observed, are unpromising.

REVIEWS.

DUST AND ITS DANGERS. By T. MITCHELL PRUDDEN, M.D. New York: G. P. Putnam's Sons, 1890.

OUR rapidly-increasing knowledge concerning the growth of the lower forms of life and their relation to disease has rendered it necessary that the profession should have some small book which they can place in the hands of their patients when inquiries are made as to the care which should be taken in regard to the inhalation of dust of various kinds.

Dr. Prudden's book possesses two advantages: It is written in a popular vein, and yet does not descend in the least to the informalities which so frequently mar medical books for popular use. The other advantage which it possesses lies in the fact that its author is one who, from his close study of the subject, is quite as well qualified to write a book for the profession as for the laity, and his statements are to be received in consequence with the fullest confidence.

SOCIETY PROCEEDINGS.

PHILADELPHIA ACADEMY OF SURGERY.

Stated Meeting, December 4, 1890.

J. EWING MEARS, M.D., IN THE CHAIR.

DR. DE WILLARD FOREST reported the following case of

TREPHINING OF THE SKULL: OTITIS MEDIA: TUBERCULAR MENINGITIS.

M. K., aged four years, of healthy parentage, without ascertainable tuberculous taint from parents or grandparents, all of whom are living.

At the age of eighteen months she had an attack of pneumonia, which, however, left no impairment of the lung. Had suppurative otitis at the age of two and a half years. At the age of three years she had erythema nodosum on the anterior part of the legs. Three months ago she had an attack of diphtheria, followed by right cervical adenitis, which did not advance to suppuration, and the induration nearly disappeared after a few weeks at the seashore.

About this time the right ear, which had discharged for two months one year previously, showed a few drops of offensive pus oozing from the meatus daily. The child's general health was excellent, and all her hygienic surroundings were good.

The only known injury of the head was a fall from a bed about six weeks previously, but the blow was not even sufficient to arouse her from sleep. The weather, early in May, 1889, was unusually hot, and the child complained greatly of the sun. Previously she had been quiet and cheerful, but at this time she became peevish, irritable, and sleepy. The temperature was normal, the pulse 90.

When seen by Dr. Shellenberger, her tongue was heavily coated and stomach irritable. Vomiting had occurred on two or three occasions, but was at once controlled by the use of peptonized milk, and it never recurred. There had been no constipation, and the bowels were easily moved by one dose of calomel and compound liquorice powder, and all through the course of the disease there was no further constipation. There was pain at the top of the head only, and her cries were fretful rather than shrieking.

A week later when Dr. Willard saw the patient with Dr. Shellenberger, there had been no recurrence of the vomiting or constipation. There was no crying out, only an increase of mental heaviness and an indisposition to be disturbed. There was considerable pain at the top of the head, but there had been no convulsions, strabismus, twitching, or rolling of the head. Her only expression of pain was, "My head hurts me so." Her countenance was placid and without a frown. Under the use of bromides and iodides, with calomel, there was slight failure during the next few days, with increasing stupor and marked loss of strength. Her head was shaven and iodoform ointment applied to the scalp. There was no paralysis and the control of the sphincters was never lost. The pulse was less than 100 and the temperature 99°. The stupor steadily increased.

By the eleventh day from the onset of the disease the patient had become absolutely unconscious; she was unable to swallow; the stupor increased and death was imminent. The slight discharge from the right ear furnished the only indication for even a possibility of relief by surgical means, but as the membrana tympani was found to be perforated, as ascertained by passing water through the nose from the auditory canal, it was decided to give the child her only chance, in the face of rapidly-approaching death, by attempting to reach any possible focus of meningeal irritation that might exist. There was no œdema and no tenderness over the mastoid. The only hope of avoiding speedy death seemed to be in reaching a collection of pus that might exist over the petrous portion of the temporal bone. The undoubted evidences of otitis media, of long standing, made such a collection possible.

Dr. Agnew was called in consultation, and he fully agreed as to the justifiability of the attempt, since the child was dying and no medical measures offered any possibility of relief. It was thought that relieving pressure on the brain by removal of serum or pus might yield temporary benefit at least.

Operation, May 27, 1889: The shaven scalp was rendered thoroughly antiseptic, and the instruments, as well as the hands of the surgeons, were similarly treated. The scalp was raised by a semicircular flap, with the base upward, three-fourths of an inch above the summit of the right auditory meatus and an equal distance behind it. A point as the centre of the proposed opening in the skull had been marked with a drill, and this brought the opening well above the lateral sinus. A three-quarter-inch trephine was used. The skull was so thin that it required great caution in the use of the instruments, and only a few turns of the handle of the trephine were made before the dura was reached. This extreme thinness of a child's skull should be carefully considered in all trephining operations. The button which was removed, and which Dr. Willard exhibited, is almost thin as paper.

On opening the dura, there was marked bulging into the opening, but no signs of pus were present. The arachnoid was congested and opaque at various points, but nowhere presented any pathological appearance. An exploring-needle was passed its entire length into the substance of the brain in the direction of the petrous portion of the temporal bone, and in six other directions, but each time failed to disclose any pus. The opening in the skull was enlarged by rongeur forceps until it was one inch in diameter, but no pus could be reached. There was considerable oozing of arachnoid fluid. By avoiding the spaces between the convolutions in the different punctures the hæmorrhage was slight, and no ligatures were required throughout the operation. No signs of injury or depression were found.

The dura was sutured in position with catgut, and the flap was loosely stitched. As the object was to relieve pressure the bone was not replaced, although it had been carefully preserved in a warm antiseptic solution. Catgut drainage was used, and thoroughly antiseptic dressings were applied.

The child rallied well. The temperature several hours later was 102°, the pulse varied from 100 to 140, and the respirations were 38. The child aroused decidedly, although she did not become fully conscious. Swallowing, which had been impossible before the operation, was now accomplished with ease, and the stupor was much less marked.

From the copious notes taken by the attending physicians and two skilled nurses in regard to the progress of the case, Dr. Willard read the following extracts.

There was no vomiting; the bowels were moved two or three times daily, and peptonized milk was well borne. Urine was passed freely at all times, but never unconsciously until within the last forty-eight hours of life. Bromides, iodides, and calomel were continued. The pulse on the first day was 132, respirations 36, temperature 100°. On the evening of the second day the temperature rose to 102°. On the morning of the third day it had fallen to 99°, and rose again in the evening to 101°. On the following morning it had fallen to 98.8°, at which time the pulse was 100 and respirations 28.

Up to this time the child has been doing exceedingly well, but in the afternoon of the third day the temperature rose to 102°, with increased restlessness and weakness. The wound was, therefore, opened. The flap had thoroughly united, except at the point of emergence of the catgut drain, where a drop of pus apparently indicated an accumulation beneath. A portion of the flap was accordingly forcibly re-elevated, but no pus was discovered. This action, the speaker now thinks, was an error. The wound was healthy, and there was no redness or signs of inflammation. A small rubber drainage-tube was inserted beneath the flap, and the under surface of the flap was washed with 1-to-4000 sublimate solution. Consciousness returned to a slight degree after this. On the third day the patient easily turned on her side and slept quietly most of the time. Respiration was moderately rapid, and although not fully conscious she was cognizant of surrounding events.

On the fourth day the temperature rose to 102.4°, reaching 100° as its lowest point during the day. The pulse was 124, and respirations 40. The child had convulsive movements and became much weaker. The convulsions increased in severity and frequency until the fifth day, and, at times, continued from thirty to forty minutes. The face was flushed; respiration urgent and jerky, with much rattling of pharyngeal mucus. The right thumb was firmly flexed on the hand, and the fingers were rigidly flexed. The elbow was rigidly extended, and the right arm moved convulsively. The left arm was almost constantly in motion with the following rapid series of movements: First, the thumb was flexed, then the fingers; then there was strong and excessive pronation. Instantly the arm was then carried outward and upward with a circular movement, then downward along the side of the head, over the ear, and down the anterior part of the chest, thus describing a perfect circle, the forearm being largely in a position of pronation. This rolling movement was repeated fifteen to twenty times, when there would be a cessation of from five to ten minutes, sometimes of sixty minutes. On account of the continuance and character of these muscular movements, Dr. Horatio C. Wood was called to see the patient in consultation to ascertain if any definite focus of irritation could be reached. The knee was bent and a restless kicking motion was kept up for from five minutes to an hour; only occasionally would there be quiet sleep. The pupils were slightly dilated, and there was no strabismus. The left pupil did not respond to light, and the right but slowly. There was slight frothing from the mouth. The pulse was feeble—110—and sometimes was lost at the wrist. The temperature was 103.2°. When the wound was opened a small hernia cerebri was found, and some softened cerebral substance escaped, but there was no pus. The hernia cerebri increased in size, and there was oozing of softened cerebral tissue. During the dressing one or two vessels bled freely, but the hæmorrhage was controlled by hot water. A finger was carried into the opening in the skull and cautious investigation was made downward toward the petrous portion of the temporal bone, but no pus was found. Nitrite of amyl controlled the convulsions slightly. Under the influence of bromide and chloral the convulsive movements had lessened, save those of the fingers, which were rigid and permanently fixed. The fingers of the right hand were less rigid than those of the left hand. The right leg was flexed at the knee and restless.

An exploring-needle was passed into the brain-substance toward the centre, from two positions, but no pus was found. The convulsions were less severe than in the morning, and deglutition, which was then impossible, was now easily performed. The face was colorless and pallid, and respiration had almost ceased. The pulse became weak and feeble, being about 200 a minute, and the child died on the following day, six days after the operation.

Post-mortem examination nine hours after death: At the site of the operation there were no signs of pus, but there had been sufficient loss of cerebral substance to make a cavity beneath the opening in the skull. The brain-tissue surrounding this was softened, but not purulent. There was much congestion of the meninges, evidently from local cerebritis. Scattered over the membranes, at various points, but especially over the base of the brain and the medulla, were disseminated points of tubercle, some of them the size of pin-heads, but there

were no deposits on either cerebral hemisphere, or in the longitudinal fissure. There were no indications of cerebritis, except the congestion surrounding the wound. There was no pus in any portion of the brain. Neither the petrous nor the mastoid regions showed any evidences of inflammation or disease. The symptoms were evidently due, therefore, to tubercular deposits; yet the ordinary symptoms of tubercular meningitis were almost absent throughout the entire course of the disease. The local cerebritis surrounding the site of the operation showed that the procedure had not been a harmless one, although done on the strictest antiseptic principles. Death was probably delayed five or six days by the operation.

The operation of trephining was undertaken as an almost hopeless attempt to discover some possible cause of the meningitis. The child was rapidly approaching death, and medical measures offered no hope. The existence of long-standing otitis media rendered the presence of temporal osteitis very probable, although there had been no symptoms of mastoid disease. The patient's life was undoubtedly lengthened a few days by the relief of pressure, and in the almost entire absence of any symptoms indicating tubercular meningitis it was not strange that the physicians should have searched most earnestly for some acute exciting cause of inflammatory trouble.

In the present condition of brain surgery it is wise, Dr. Willard said, to report all failures as well as successes, in order that the accumulated evidence may finally give us the proper limitation for operative interference for disease within the cranium.

In discussing this paper, DR. JAMES COLLINS said that he was much pleased to hear the report, and thought that in many cases of ear disease such an operation would be proper. He has performed one or two similar operations, but in traumatic cases. He operated in a case of hæmorrhage, and removed a clot which was pressing upon the brain; the patient recovered. But whether brain surgery will enable us to anticipate the ravages of tubercle is still a question.

DR. JOHN B. DEAVER said that the piece of bone exhibited was certainly very thin, and, in contrast with this, he mentioned the case of a child with an intracranial aneurism of the arterio-venous type which he recently operated on, and in which the skull was quite as thick as an adult skull.

The diagnosis of brain-abscess, he said, is certainly often difficult. He recalled the case of a child who, while throwing an umbrella into the air, was injured by the end of one of the ribs entering the nostril and fracturing the ethmoid bone. Symptoms developed pointing to brain-abscess. The patient was trephined, but no abscess was found. A second operation was also done without finding the abscess. The autopsy showed a large abscess in front of the fissure of Rolando, with a sinus extending to the wound in the nostril. He could readily see how a case of tubercular meningitis with anomalous symptoms might lead the surgeon to suspect abscess resulting from ear disease.

In closing the discussion, DR. WILLARD said that, as stated in the paper, the operation was undertaken as the only possible means of saving the child's life. The presence of suppuration of the ear for two years, with perforation of the membrana tympani, gave the only possible clue to a surgical cause. There were no evidences of mastoid disease, but there was a possibility that the petrous portion had been perforated, and that a collection of pus had formed at this point, or that the meninges were becoming congested. There was such an entire absence of the ordinary symptoms of tubercular meningitis that he did not believe that tubercular deposit was present until the post-mortem examination revealed it.

DR. THOMAS G. MORTON then reported a case of

CONGENITAL (DOUBLE) EQUINO-VARUS, WITH EXCISION OF BOTH ASTRAGALI,

and exhibited casts, photographs, specimens, and patient. Linton B., aged eleven years, from Towanda, Pa., was brought to the Orthopædic Hospital, October 10, 1890, with talipes equino-varus—complicated variety.

History: At birth both feet were greatly distorted, and when a few weeks old tenotomy was performed and a plaster dressing applied. All treatment was abandoned at the end of a year, although the deformity had not been improved. At two years of age the child attempted to stand, but from that time to the present he has been unable to walk or even stand without some support.

On examination the limbs were found poorly developed, muscles greatly atrophied, feet rigid and could not be brought to a right angle with the leg. The astragalus was displaced forward. There was contraction of all the flexor muscles.

On October 16th, an incision was made from the external malleolus to near the base of the metatarsal bone of the fourth toe. The astragalus was found in front of the tibia and fibula and was subcutaneous; its presence in this position rendered flexion of the foot impossible. It was readily excised. The tendo-Achillis as well as the flexor tendons of all the toes was cut, and in the right foot the plantar fascia was divided. No vessel required ligation. A catgut drain was inserted, and, after the usual dressings, a right-angled tin splint was applied.

Four weeks subsequently the dressings were removed, when the wounds were firmly closed, and the lad was allowed to walk. On the thirty-fifth day he walked nearly a mile with no inconvenience.

In connection with this report Dr. Morton read the following letters—one from Dr. Hunt, the other from Dr. Forbes:

"PHILADELPHIA, October 16, 1890.

"To-day I was present at an operation for the removal of both astragali from the feet of a boy about eleven years old, for intractable club-foot when treated by ordinary methods. The operator was Dr. Thomas G. Morton; Dr. W. S. Forbes was also present. Dr. Morton was particularly desirous of the presence of Dr. Forbes and myself, as the necessity for this apparently serious operation has been questioned. I had seen it performed on very young children with favorable results, but as the displaced bones had nothing about them recognizable as astragali, I was anxious to have an older patient to examine in order to observe the effects of development in the abnormal position. That there was nothing normal recognizable in the cases of the young infants I

speak of is proved by the fact that, on one occasion, both bones were removed and were sent to that profound anatomist, Dr. Joseph Leidy. He did not know them, or even whether they were human. This is important, as bearing upon the fact of regarding them surgically in these cases as foreign bodies.

"In the case of the patient operated on to-day the deformity characteristic of a displaced and abnormal astragalus was particularly noticeable in both feet. In front of the external malleolus there was a marked projection more than one-half an inch in diameter, which, when covered by the skin, seemed both to sight and touch like the head of some displaced bone. The normal depression across the natural foot at this place was wanting, and the projecting bone made full flexion impossible. There were the usual callosities found on the feet of active boys of this age who have been afflicted with club-foot from birth.

"The boy was etherized and the bones were removed through one long incision in each foot. The Achillis tendons were divided, and, in one foot, it was necessary to divide the plantar fascia subcutaneously. The wounds were sutured, and the feet were easily brought into the right-angled position and secured upon tin splints.

"The removed bones were now examined. As in the young infant, there was little resemblance to normal bones, but there was enough to recognize what they were. One of them is sufficient for description: In the first place, it was abnormally long, and much the greater portion of it was in front of its true position. It was bent upon itself, and, as it were, partially rotated inward. The bending was across the body of the bone, and the above-mentioned peculiar projection in front of the external malleolus was the anterior lateral portion of the external face of the astragalus, which is normally marked by the articulating facet for the external malleolus. The true articulating facet was only partially formed. The neck and head of the bone projected obliquely across the foot from without inward. The bone seemed to have no support from the sustentaculum tali, but as the object was to save the foot this could not be positively ascertained; nor could the effect of the displaced bone upon the rest of the tarsus, for the same reason, be looked into. Sufficient, however, was found to demonstrate that in this class of cases of club-foot, the astragalus is not only useless, but very harmful. It is practically a foreign body, and should therefore be removed. Without its removal the sole of the foot cannot be brought to the ground, because the foot cannot be flexed to a right angle, as the displaced bone is a complete check to the joint. WILLIAM HUNT."

DR. FORBES wrote:

"The astragalus was displaced outward and forward, its long axis diagonally across the external dorsal aspect of the foot. Its interior posterior margin was placed in front of, and articulated with, the external malleolus (the fibula). The os calcis, the long axis of which is normally quite in accord with the long axis of the foot, had its long axis thrown from behind forward and outward and nearly at a right angle with the astragalus, as the latter was found as stated above. The outer margin of the whole foot was turned inward; the plantar aspect of the whole foot faced the foot on the opposite side.

"In the production of this astragalus-displacement all the flexor muscles have been more or less involved, the flexor communis the least."

DR. MORTON also exhibited another case illustrating severe congenital equino-varus. The girl, eleven years of age, was recently admitted into the Orthopædic Hospital, and was presented for inspection in order that the deformity of her foot could be compared with the deformity shown in the casts, taken before operation, of the feet of the boy previously exhibited. In the case of the girl there was no displacement of the astragalus, but the deformity was due to distortion of the soft parts, which can be cured by section of those tissues. The case was one of *uncomplicated* equino-varus, for the tarsal bones were normally situated, the intra-uterine paralysis having occurred late in gestation; while the first case was a *complicated* equino-varus, with displacement of the astragalus, which required excision of that bone. In the latter the paralysis occurred early in fœtal life, and the flexor muscles, by long-continued traction, forced the astragalus forward and inward, and entirely away from its normal position.

In the uncomplicated deformity, division of contracted tissues is all that is required; in the complicated, the astragalus must always be removed.

DR. MORTON then showed a

LARGE CALCULUS REMOVED BY SUPRAPUBIC CYSTOTOMY.

The calculus weighed 940 grains. The patient was sixty-five years of age, and had been suffering from inflammation of the bladder, with symptoms of stone, for many years. After the operation a soft catheter was retained in the bladder, as well as a rubber drain in the wound.

DR. WILLIAM G. PORTER exhibited a

DRESSING FOR FRACTURE OF THE CLAVICLE,

applied to a patient.

The dressing was devised by Dr. Arthur E. Spohn, of Corpus Christi, Texas. Dr. Porter thought that it carries out the indications in the treatment of this common accident better than any dressing with which he is acquainted. The dressing consists of an anterior splint formed of a piece of barrel-hoop, which is padded, the padding being thicker at the two extremities. The shoulder is drawn upward, backward, and outward, and the deformity reduced. The splint is then applied to the front of the chest and held in place by a posterior figure-of-eight bandage of the shoulders. All the crossings of the bandage are secured by stitches. The dressing is simple and cheap, and has the advantage of leaving both arms free. The only objection to it that Dr. Porter has noticed is that, if the bandage is applied tightly, it will cause swelling of the arms from interference with the circulation. In the case exhibited, the fracture occurred two weeks previously, and was the only case of true fracture of the clavicle that the speaker had seen since he became familiar with the dressing. He has also used it in one case of green-stick fracture of the clavicle, with satisfactory results.

In discussion, DR. MORTON said that experience might demonstrate that the apparatus exhibited is a useful dressing in certain cases of fracture of the clavicle. In all fractures of this bone it is safer to keep the patient

for at least a week or two in the recumbent position. In oblique fractures, he thought that the apparatus exhibited would be hardly sufficient to retain the fragments in position.

DR. JOHN B. ROBERTS said that it seemed to him the principal element in the treatment of fracture of the clavicle is fixation of the inferior angle of the scapula. He feels that in these cases the scapula must be rendered immovable, and kept so either by putting the patient on his back in bed, or by the use of some of the methods of making pressure upon the lower angle of the scapula that have been suggested. He could not see how a figure-of-eight of the shoulders with the anterior extension-splint pressing upon the deltoid muscles over the head of the humeri, can make enough pressure to prevent the scapula from slipping out toward the axilla and causing overlapping of the fragments. As he placed his hand on the clavicle in this case, he noticed considerable deformity, but whether this was due to overlapping or to callus he could not say.

DR. WILLARD noticed that as the man took off his shirt and replaced it, he moved his arm very freely and without the least expression of pain. The speaker never before saw a patient do this with so much ease at the end of two weeks after a fracture of the clavicle.

DR. PORTER thought that if anyone would make the experiment of having the shoulders drawn upward, outward and backward and secured with this dressing, they would find that it makes considerable compression and holds the shoulders firmly in position. As he had stated, he had had no extended experience with the appliance, but it seems to fulfil the indications very well.

(To be continued.)

CORRESPONDENCE.

TREATMENT OF ECTOPIC PREGNANCY.

To the Editor of THE MEDICAL NEWS,

SIR: Dr. Baldy's article on the treatment of ectopic pregnancy, which appeared in the last number of THE MEDICAL NEWS, contains two references to my work, which, as usual, are more or less glaringly inaccurate. In reference to Dr. Morris J. Lewis's case, he states that "a growing tubal pregnancy" was removed by Dr. Penrose, the truth being that a dead and partly macerated fœtus was removed. The other reference appears under the heading: "The harm done [by elecricity] in case of a mistaken diagnosis," and as it is the only instance of such "harm" cited by him, its flimsy character disposes of the claim. He here states that Dr. Bradford reported a case of mine in which two applications of electricity were followed by "alarming illness." The case was not reported by Dr. Bradford, but by myself, in the chapter on "Contra-indications" in my work on *Electricity in the Diseases of Women*. At the operation, which was followed by a fatal result, a malignant cyst of the broad ligament was discovered. The third error was in saying that this case was made any worse by the treatment, beyond a mere aggravation of the pain, which led me to examine more closely, and discover a cystic condition. The fourth error was in alluding to this case at all, which received intra-uterine applications, when he states, at the beginning of the article, that only the approved methods of passing the currents through the sac will be considered. In such methods the internal electrode is invariably placed in the vagina.

Yours truly,

G. BETTON MASSEY, M.D.

212 SOUTH FIFTEENTH STREET, PHILADELPHIA

IDIOSYNCRASY TO THE EXTERNAL APPLICATION OF IODINE.

To the Editor of THE MEDICAL NEWS,

SIR: In the Surgical Ward of the German Hospital, in the service of Dr. Deaver, there recently occurred a case of extreme idiosyncrasy to iodine.

The patient, an adult, suffering from osteitis of the cervical vertebræ, was painted with tincture of iodine just below the mastoid process over an area three inches square, only one application being made. Almost at once the patient complained of tingling and burning sensations over the whole body, and in less than three minutes the skin was everywhere covered with an intense erythematous rash. The patient now complained of ringing in the ears, throbbing in the head, and palpitation, and became very anxious. His temperature, half an hour after the application, was 96¼° F., his pulse was 66. Respiration was normal. His lips were somewhat cyanotic in appearance. The rash began to disappear in the course of an hour. The eyes began to "water," and the lids were very much congested, as well as the conjunctiva and the eyeball. There was no vomiting or sneezing at any time. The region on which the application was made became much swollen. The temperature two hours after the first symptoms appeared was 100°, and the pulse at the same time 96. The eruption had entirely disappeared in three hours, although the conjunctiva remained reddened. The urine, examined half an hour and three hours respectively after the application, gave no reaction to the ordinary tests for iodine.

The patient gives a history of a similar experience some years ago after an external application of the tincture of iodine. Iodide of potassium had been administered to him in small doses for many weeks without the occurrence of bad symptoms.

The only treatment was the removal of as much as possible of the iodine that remained on the skin, and stimulation.

At the present writing, twelve hours after the occurrence, no symptoms of the intoxication remain.

M. V. BALL, M.D.,
Resident Surgeon.

KOCH'S METHOD AT ASHEVILLE, N. C.

To the Editor of THE MEDICAL NEWS,

SIR: At the present time it may not be out of place to report unfinished cases subjected to the new method of treatment for tuberculosis suggested by Professor Koch, and to state its effects as far as observed.

I began to use the method here immediately upon my return from Berlin on December 23d. Thus far, eleven cases have been treated by me at my private institution for diseases of the lungs and throat, and one case at the Mission Hospital in this city.

Of the eleven cases five had, besides the pulmonary affection, tubercular deposit in the larynx; in two of these, ulcerative processes existed, and the lung disease was beyond what may be called an early stage. Five other cases are in an earlier stage of pulmonary tuberculosis; the eleventh case is one of lupus vulgaris of ten years' standing, with progressive destructive tendencies.

The case at the Mission Hospital is also one of lupus that has lasted thirty-five years and is very severe, involving extensive portions of the nose and face. All cases are in fair physical condition and bear the reactions well.

Without going into the details of each dose, with its accompanying reaction, I have begun with only three-tenths of a milligramme for the initial dose in cases in which the larynx is involved, and in all but one case the reaction was well marked. In one case it was quite serious, inasmuch as so much swelling occurred in the larynx that the respiration was considerably impeded for several hours.

In the purely pulmonary cases the usual beginning dose of 1 milligramme was used; of these, one case has shown no reaction yet, 4 milligrams having been reached at the present time; in the meantime the expectoration is loaded with tubercle bacilli.

All these cases show more or less improvement; especially is this manifest in the larynx, where diminution of the infiltration and tendency to repair are unmistakable.

Increase in the moist sounds in the lungs, or an appearance of such where previously absent, has been quite constant during the reaction and for a day or two thereafter.

In the cases which have received the treatment for two weeks or longer there is evidence of other improvement, especially in the general condition of the patient; none are losing in weight, and several are gaining quite perceptibly.

In the pulmonary cases, after reaction, several days' intermission of the treatment is given, to allow them to recuperate fully, during which time the climatic treatment is carried out as before.

The lupus-patient at the Mission Hospital is doing very well, the ulcer is healing from the edges and granulation of the deep cavities has commenced. The upper lobe of the right lung in this case showed symptoms of infiltration, with cough and bloody expectoration, after the third injection of 10 milligrammes. No evidence of pulmonary disease existed before the treatment. In the lupus case in my institution the reaction is intense after one milligramme, and accompanied by an intense scarlatinous rash all over the body.

So far, then, the results are very satisfactory indeed, and with the advantage of climate as well we hope to be able to show all that is possible to accomplish under the most favorable climatic condition with strict and painstaking management in a special institution by the new method, which is now the absorbing theme of medical men and the public in general, even at this remote region.

Very respectfully,

KARL VON RUCK, M.D.

ASHEVILLE, N. C., January 10, 1890.

To the Editor of THE MEDICAL NEWS,

SIR: My attention has been called to the announcement of Mr. F. A. Davis, a publisher of Philadelphia, who claims to have in press the second volume of a work entitled "A Treatise on Materia Medica, Pharmacology and Therapeutics," my name being used as joint author with Dr. John V. Shoemaker. I desire to say that the use of my name in connection with Vol. II. of this work is unauthorized, and without my consent, and I am credibly advised that such publication can be restrained by legal means. For good and sufficient cause, my association with the publisher and reputed author was severed months ago, and of this, intending purchasers will take due notice. Very respectfully,

JOHN AULDE, M.D.

1910 ARCH STREET, PHILADELPHIA.
January 5, 1891.

NEWS ITEMS.

New York State Medical Association.—The Seventh Annual Meeting of the Fifth District Branch of the New York State Medical Association will be held in Brooklyn on Tuesday, May 26, 1891. All Fellows desiring to read papers will please notify the Secretary, E. H. Squibb, M.D., P. O. Box 94, Brooklyn.

Decrease of Insanity in 1890.—In New York State a considerable decline in insanity is indicated by the annual report of the Commissioners in Lunacy, just made to the Governor for the year 1890. The total number of reported cases was 523, as against 598 during the year previous, a reduction of more than twelve per cent.

The cities of New York and Brooklyn furnished about fifty per cent. of the new cases, and it is noted in the report that the decrease in insanity, in the two cities named, has been much more marked than in the other parts of the State. The ratio of new cases to population is constantly decreasing in the two cities; the same seems to be true of the State at large, but in a less marked degree. The report further shows that about sixteen hundred insane are at present in the State hospitals under the management of the Commissioners.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM JANUARY 6 TO JANUARY 12, 1891.

By direction of the Secretary of War, JAMES P. KIMBALL, *Major and Surgeon*, is assigned to duty at Fort Supply, Indian Territory, in Special Orders, No. 132, September 24, 1890, Department of the Missouri.—Par. 6, *S. O. 4, A. G. O.*, January 6, 1891.

By direction of the Secretary of War, CHARLES SUTHERLAND, *Brigadier-General and Surgeon-General*, will, as soon as practicable, repair to this city, and assume the duties of his office.—Par. 9, *S. O. 2, A. G. O., Washington, D. C.*, January 3, 1891.

APPOINTMENT.

SUTHERLAND, CHARLES, *Colonel and Surgeon.*—To be Surgeon-General, with the rank of Brigadier-General, December 23, 1890, vice Baxter, deceased.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JANUARY 10, 1891.

RUTH, M. L., *Surgeon.*—Ordered to the U. S. S. "Newark," February 2, 1891.

RUSH, W. H., *Passed Assistant Surgeon.*—Detached from the U. S. S. "Saratoga," and ordered to the U. S. S. "Newark," February 2, 1891.

ASHBRIDGE, RICHARD, *Passed Assistant Surgeon.*—Ordered to the U. S. S. "Saratoga."

EXTRA EDITION.

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I.

VIRCHOW ON KOCH'S METHODS.

SPECIAL CABLE DISPATCH TO THE MEDICAL NEWS.

II.

THE COMPOSITION OF KOCH'S LIQUID.

SPECIAL CABLE DISPATCH TO THE MEDICAL NEWS.

III.

THE COMPOSITION OF THE FLUID OF DIXON.

VIRCHOW ON THE INJURIOUS EFFECTS OF KOCH'S METHODS.

At the Berlin Medical Society on January 7th, Professor Virchow exhibited specimens from twenty-one patients treated by Koch's method who died before January 1st. Since then six or seven more necropsies had been made by him and specimens from these were also shown. Of the former series, sixteen were cases of phthisis.

Professor Virchow illustrated the irritating effects of the fluid by the specimen of a brain removed from a child with tuberculous arachnitis, who died after four injections of the lymph amounting in all to two milligrammes. There was intense hyperæmia of the brain and pia mater such as Professor Virchow had never before seen. The vessels of the pia were extremely engorged and the brain-substance internally was of a dusky-red tint. The speaker could not see any signs of retrogressive metamorphosis of the tubercles. Acute hyperæmia and swelling were also seen in the internal organs of other cases. The walls of old cavities in the lungs showed unusual redness of the granulations and recent hæmorrhages. In one case hæmoptysis from an old cavity was the immediate cause of death.

Virchow says there can be no doubt that in internal organs acute inflammation and active proliferation are set up by injections of the fluid. These conditions are seen particularly in the edges of tuberculous ulcers and in neighboring lymphatic glands, especially the bronchial and mesenteric glands. These glands swell to quite an unusual extent and rapid proliferation of the cells in their interior takes place. The colorless elements of the blood are increased and a condition of leucocytosis is established. In the larynx, even when the surfaces of the ulcers become clean, swelling of the adjoining parts may be dangerously great. He showed a recent specimen in which erysipelatous-like œdema of the glottis and a retro-pharyngeal

phlegmon had been produced. The changes in the lungs consisted in caseous hepatization, of which an extreme example was shown.

This condition existed in five out of the sixteen cases of phthisis, associated with a special form of pneumonia, resembling the catarrhal type, but differing therefrom in the character of the secretion. The lungs in some places presented foci of softening, and even cavities, the result of acute inflammation caused by the injections of the lymph.

The *most important effect observed, however, was an eruption of fresh crops of tubercles after the injections.* This occurs especially in the pleura, pericardium, and peritoneum, and Virchow says that in the case of these serous membranes the statement that the substance of the tubercle is destroyed by the remedy is not confirmed by his examinations; he adds that if the effect of the remedy is to cause breaking down, the result would be to release the bacilli and give rise to new foci of tuberculous disease in other parts of the body by infection with the products of disintegration. Virchow, therefore, urges the greatest caution in the use of the remedy. While admitting that in many cases the lymph does produce the effects claimed for it, he points out that this result is not constant, and he cites cases in which large masses of tubercle were entirely unaffected by injections. He also showed specimens in which perforation of the intestines had been caused by the treatment, and one case of tuberculosis of the larynx in which fresh and extremely intense eruptions of tubercles had taken place throughout the whole extent of the larynx and trachea.

January 14th. Before the Berlin Medical Association to-day Prof. Virchow resumed his lecture on the subject of cases which have resulted fatally after the inoculations of the Koch remedy. He said that he was not prejudiced against the remedy; he simply wished to give warning regarding its too general application. In the discussion which followed, Professors Fränkel and Baginsky spoke in support of Professor Virchow's contention that tubercular disease was sometimes transferred to sound organs by inoculation. Numerous patients in Vienna, after reading the views expressed by Professor Virchow, declined to submit to further treatment by the Koch method.

ABSTRACT OF A THIRD COMMUNICATION ON A REMEDY FOR TUBERCULOSIS.[1]

BY PROFESSOR ROBERT KOCH.

As long as the only point of importance was to judge of the correctness of my statement it was not essential to know what the remedy contained and what its origin was. On the contrary, it was clear that subsequent experiments would be all the more unprejudiced if nothing was known of the remedy itself. I think the right moment has come to make the statements which follow.

If guinea-pigs be inoculated with a pure cultivation of tubercle bacilli the wound closes over with a sticky exudate. After ten to fourteen days a hard nodule presents itself, which, soon breaking, forms an ulcerating sore, which continues until the animal dies.

Quite a different condition of things occurs when a guinea-pig already suffering from tuberculosis is inoculated. An animal successfully inoculated from four to six weeks before is best adapted to this purpose. In such an animal the small indentation assumes the same sticky covering at the beginning, but no nodule forms. On the contrary, on the day following or the second day after the inoculation, the place where the lymph was injected shows a peculiar change taking place at the point of inoculation.

At the point of inoculation and for one centimetre around the tissues become hard and dark. During the next few days it becomes clear that the epidermis thus changed is necrotic; finally, it is thrown off, and a flat, ulcerated surface remains, which generally heals quickly and completely without carrying infection to the neighboring lymphatic glands. Thus the inoculated tubercle bacilli act quite differently on the skin of a healthy guinea-pig than on that of a tuberculous one, but this remarkable action does not belong exclusively to living tubercle bacilli, but also in the same degree to dead ones, whether killed by low temperatures of long duration, which I at first tried, or by boiling heat, or by certain chemicals. Pure cultivations of tubercle bacilli thus killed after they have been ground down and suspended in water, can be injected under the skin of healthy guinea-pigs in large quantities without producing anything but local suppuration.

Tuberculous guinea-pigs can be killed by injec-

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[1] Deutsche medicinische Wochenschrift, January 15, 1891.

tions of very small quantities—a small dose producing widespread necrosis of the skin. If still more dilute the animals remain alive, and if the injections be continued at intervals of one or two days a noticeable improvement in their condition soon sets in. The ulcer at the point of inoculation becomes swollen and finally cicatrizes. This is never the case without such treatment. The swollen lymphatic glands become smaller and the condition, as regards nutrition, improves. Finally, the progress of the disease is arrested, if it is not already so far advanced that the animal dies of debility. The important thing to be done is to carry out the process which takes place within the body, outside of it also, and, if possible to extract and isolate the curative substance from the tubercle bacilli. This problem required much work and time before I at last succeeded by the help of a 40 to 50 per cent. solution of glycerin in extracting the active principle from the tubercle bacilli.

My further experiments on animals, and finally on human beings, were made with liquid thus obtained, and in this way also the liquid which I let other physicians have in order to repeat the experiments, was obtained. The remedy with which the new treatment of tuberculosis is carried out is, therefore, a glycerin extract of pure cultivations of tubercle bacilli. The constitution of the active principle can as yet be only a matter of conjecture.

It seems to me to be a derivative of albuminous bodies, and to be in close relation to them, but it does not belong to the group of so called tox-albumins, as it can withstand high temperatures, and in the dialyzer passes quickly and easily through the membrane.

The quantity of active principle present in the extract is in all probability very small. I estimate it at a fraction of one per cent.; thus if my assumption be correct, we have to deal with a substance, the action of which on the tuberculous organism far surpasses that of the strongest drugs known.

[The paper concludes with speculations as to the mode of action of remedy in affected tissues.—ED.]

POSSIBILITY OF CHECKING THE TUBERCULAR PROCESS IN MAN BY THE AGENCY OF A METABOLIC PRODUCT OF THE TUBERCLE BACILLUS.

BY SAMUEL G. DIXON, M.D.

IN THE MEDICAL NEWS of October 19, 1889, I called attention to a morphological change of the tubercle bacillus which was different from any that I had previously seen. This change of form suggested to my mind a possible evolution of function, and I realized that it might mean either a greater or less degree of virulence. As a less degree of virulence would be desirable in order to increase the power of animal resistance to pathogenic organisms, I cultivated the bacilli in a number of tubes to the stage at which few or no ordinary rod-formed bacilli could be found in the cultures. When they had arrived at this state of life, I imbedded a mass of the bacilli and débris under the skin of a guinea-pig. The inoculation apparently set up a disturbance in the animal economy. There was a short febrile stage; the lymphatic glands became swollen and the guinea pig seemed to be quite sick. This condition, however, soon passed away and the animal apparently recovered. Immediately after this injection the animal seemed to resist the effects of virulent tubercle bacilli.

In working out the two hypotheses published on October 19, 1889, I became convinced that by treating a mass of tuberculous tissue containing the odd forms of bacilli with some powerful solvent, I might dissolve out a principle that when injected into the animal economy would change the chemical condition of the tissues and thereby prevent the growth of the tubercle bacilli that inhabited the tissues.

To accomplish this, I submitted the tubes containing these actual tuberculous bacillary growths to the action of ether, and also to a saturated solution of sodium chloride. The respective mixtures were then passed through a Pasteur filter without pressure. This active principle, when subcutaneously injected in tuberculous animals, caused a febrile reaction. The tissue in the immediate neighborhood of the tubercles becomes hyperæmic, and the symptoms manifested resemble those produced by the introduction of a portion of the original mass. They also resembled the symptoms said to be produced in tuberculous animals by the introduction of the Koch remedy into the circulation, as well as those produced by the liquid made by Dr. Craft, of Cleveland, Ohio.

A CONVENTION of American physicians interested in electro-therapeutics has been called to meet at the Academy of Medicine, No. 17 West 43d Street, New York, on January 22, 1891, at 11 A.M., for the purpose of organizing an American Electro-therapeutic Association.

MEDICAL PROGRESS.

The Treatment of Chronic Endometritis by Intra-uterine Applications of Boric Acid.—DR. ALEXANDER DUKE (*British Medical Journal*, December 20, 1890) has succeeded in curing a number of obstinate and previously-intractable cases of endometritis by applying pure boric acid to the endometrium. The powder is applied by means of a somewhat curved hard-rubber tube, slightly larger than a No. 12 catheter, and fitted with a piston of the same material. About two inches of the distal end of the tube is charged by plunging it into a deep bottle containing the acid, the piston being withdrawn. The cervical canal is then freed from secretion, the point of the tube is inserted into the uterus, and the acid deposited in the cavity by pushing the piston home. The vaginal walls should be dusted with the powder at the same time. The applications should be repeated at intervals of three or four days.

Treatment of Dandruff.—DR. EDWARD CLARKE (*Lancet*, December 27, 1890) describes the following method of treating persistent dandruff. The method is that practised by Dr. Shudham, and has given excellent results. The head should be well washed with hot water and alcohol soap (pure soft soap, 2 ounces; alcohol, ½ ounce; oil of lavender, 10 minims). The soap is then washed away with hot water, and the scalp thoroughly dried by means of a warm soft cloth. Glycerole of tannin of a strength of from ten to thirty grains to an ounce, according to the obstinacy of the case, should then be well rubbed into the scalp. If tannin fails, resorcin may be used in its place. This process should be repeated once or twice a week. After the dandruff has disappeared the scalp should be rubbed daily with olive oil, containing in each case ten grains of carbolic acid and one drachm of oil of cinnamon.

Treatment of Goitre by Galvano-puncture.—DR. JAMES HENDRIE LLOYD (*University Medical Magazine*, December, 1890) reports four cases of follicular goitre treated by galvano-puncture. The first case was of several years' duration in a woman sixty years old, and was cured by fourteen punctures, each sitting lasting about twenty minutes and the current strength averaging between fourteen and eighteen milliampères. During each application the gland tissue became swollen around the needles, sensitive to pressure, and gas, probably hydrogen, crepitated from within and escaped from the punctures. The surrounding skin was reddened and occasionally the points of puncture were distinctly burned because of defective insulation. For a day or two after the operation the gland would be very sore and on several occasions threatened to suppurate, but this it never did.

The second case was that of a young woman in whom a goitre had been present for about eighteen months. Punctures were made at intervals of a week "for a long while," the current-strength varying from fourteen to twenty milliampères. On one occasion severe inflammation of the gland and of the skin for some distance downward followed. When treatment was stopped the gland was shrunken, hard and gristly, and has remained so for three years.

The third case was not so satisfactory, partly at least because the goitre was an enormous one of many years' standing, bulging on each side and reaching almost to the ears. Very large veins ran over the surface and through the gland structure. The patient discontinued her visits before the results of treatment could be determined.

The fourth case declined to submit to treatment after the first application of the needles.

The apparatus used for the punctures consisted of three small gold-plated needles insulated to within one-third of an inch of the point. These were connected by a branching cord, so that all could be attached to the negative pole of the battery. The method of operating was as follows: The needles were inserted into the tumor far enough to protect the skin by the insulating material, care being taken to avoid veins. The positive pole was connected with a large, flat, sponge electrode. Thus resistance was reduced as much as possible and a strong current made possible without too much pain. But even with this precaution the skin under the sponge became at times much reddened, and in one instance blisters formed. An accurate milliampèremeter was kept in the circuit and constantly observed, and a water rheostat was used to avoid shocks.

Longevity Among the California Indians.—Dr. Remondino, of San Diego, recently addressed the California State Medical Society regarding the longevity of some of the Indians of Southern California, and although his statements are extraordinary, they are of interest. He states that he has obtained strong evidence that not a few of the Indians pass the age of one hundred years. The Indian village at Capitan Grande contains several women more than one hundred and thirty years old. Dr. Remondino quotes a statement of Dr. Edward Palmer, who for a long time was associated with the Smithsonian Institution, that there lived in Southern California a squaw who was one hundred and twenty-five years old, and that he has seen her carry, tied up in a blanket, six melons for the distance of two miles. Near San Diego there lives an Indian who though bent, wrinkled, blind, and reputed to be one hundred and forty years old, is still quite active and daily makes his way to the beach and along the bed of the creek to search for drift-wood. There is another Indian whose age is believed to be not less than one hundred and fifteen years, who is remarkably active and a great walker, an ordinary journey for him being a walk of fifty miles. Father Ulbach, a missionary well acquainted with the habits of the Indians, says that a more temperate and abstemious class of people does not exist, their diet being almost solely of acorns, flour and water.

Climate is undoubtedly a factor in the production of these long years of activity. Malarial diseases and rheumatism are unknown among the original occupiers of the soil, no land is more free from lung affections, and renal and hepatic disorders are seldom met with.

THE MEDICAL NEWS.

A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LVIII. SATURDAY, JANUARY 24, 1891. No. 4.

ORIGINAL LECTURES.

DIGESTION, ASSIMILATION, AND OXIDATION—THEIR NORMAL AND ABNORMAL CONDITIONS IN RELATION TO HEALTH AND DISEASE.

A Series of Clinical Lectures, delivered at the New York Post-Graduate Medical School and Hospital.

BY WILLIAM HENRY PORTER, M.D.,
PROFESSOR OF CLINICAL MEDICINE AND PATHOLOGY.

LECTURE II.

GENTLEMEN: To-day I show you a case which illustrates more particularly primary gastric indigestion.

Mrs. M. E., aged thirty-five years. Up to ten days ago the patient considered herself perfectly well, when she commenced to have pain and distress in the epigastric region immediately after eating, frequently followed by vomiting of a greenish and acid-tasting fluid. Pyrosis occurs immediately after each meal. Her appetite is capricious; bowels irregular; she has some headache and vertigo; her tongue is large, pale and flabby, and shows distinctly imprints of the teeth. Her pulse is weak, the heart's action slow and feeble, the first sound of the heart being faint and somewhat prolonged. In this case remedies addressed chiefly to the stomach have relieved the more active symptoms. The appearance, however, of the tongue; the condition of the heart; the tendency to headache and vertigo, and the irregular condition of the bowels show quite conclusively that underlying or behind these active gastric symptoms we have grave intestinal and hepatic disturbances which must be overcome if we wish to place our patient in the best possible nutritive condition and prevent a recurrence of the more active gastric disturbances.

At our last lecture we considered the changes wrought upon the food-stuffs while in the stomach, and we are now ready to begin with the changes effected after leaving the pyloric outlet and entering the intestines.

The *first* digestive fluid which gains access to the food-stuffs in the intestinal canal is that secreted by Brunner's glands. These glands, from ten to twenty in number, are situated for the most part in the upper portion of the duodenum, above the entrance of the ductus communis choledochcus and pancreatic duct, and but few are found below these openings. They seem to partake of the characteristics of compound racemose and of compound follicular glands. Their secretion is, comparatively speaking, small in quantity and has not as yet been obtained in sufficiently large amounts to give absolute and positive evidence as to its chemical composition and action, but so far as is known it is strongly alkaline, and thereby helps to reduce the acidity of the food-stuffs as they pass into the intestines. It is also said to contain a ferment which has for its physiological action the liquefaction of proteid substances and their conversion into a diffusible peptone.

The *second* or diastatic ferment converts starch into sugar or glucose, and is said to be the most active of all the sugar-forming ferments found in the animal economy. This assertion, however, must be taken with some reservation on account of the difficulty met with in securing the fluid from these glands. As the result of the action of these ferments a certain amount of the proteids and sugars is converted into diffusible substances, which reduces the amount of work to be performed by the pancreatic and intestinal ferments proper.

The next digestive fluids with which the food comes in contact are those secreted by the pancreas and liver, and for convenience we will first consider the former. The quantity of pancreatic juice secreted in twenty-four hours is about 800 grammes, or twenty-five ounces. It has a very strong alkaline reaction due to the large amount of carbonate of sodium that it contains, which tends to transform rapidly the acid chyme into an alkaline fluid, to convert the proteids into an alkaline albumin, and to place all the food-stuffs in a proper condition to be acted upon by its contained ferments. The pancreatic fluid, as is seen by our table,[1] is credited with containing four well-defined ferments, and one of questionable existence. This questionable ferment is rather the result of the steapsin plus the alkalinity of the pancreatic fluid, which produces emulsification, than a separate ferment.

First, the diastatic or amyloptic ferment has for its physiological function the property of converting all forms of starch, both in the cooked or hydrated state, and in the raw condition into glucose, and in intensity of action it is said to stand second only to the diastatic ferment secreted by Brunner's glands. It is by this diastatic action of the pancreatic fluid that the major part of our glucose is formed from the starches.

The *second*, or tryptic ferment, is a powerfully-erosive agent attacking alkaline albumin in an alkaline medium and converting it first into propeptone, then into albumoses, and finally into a true and diffusible peptone. In this action the proteids do not swell up, gelatinize, and finally become peptones, as in the stomach when acted upon by the pepsin, but the solid proteids are eaten away or eroded, molecule by molecule, until they are finally transformed. In this respect it differs from the peptic action and is very much more powerful, and converts a larger quantity of the proteid substances into peptones. Synchronous with this action numerous by-products are formed, but which have, as yet, become of no practical value.

The *third*, or milk-curdling ferment, attacks the milk which may have passed through the stomach unaffected by the milk-curdling ferment of the gastric secretion, transforming it into a semi-solid and flaky casein to be

[1] See Lecture I.

attacked by the tryptic ferment and converted into a diffusible peptone.

Fourth, the fat-splitting or steaptic ferment is the one by which the various forms of fat are split up into their component parts—fatty acid and glycerin—the former by the further action of the ferment being joined to the sodium bicarbonate of the pancreatic juice, and finally resulting in the formation of a hard soap.

The *fifth* ferment, emulsin, which is questionable, is probably not a ferment, but the emulsifying action of the pancreatic juice is probably due to the combined action of the strong alkalinity of this fluid and the steapsin, on the fats, by which the latter are most perfectly emulsified and placed in a condition in which the epithelial cells can seize upon the minute particles of fat, draw them into the cell-protoplasm and discharge them into the lacteals. This absorption by the epithelium is easily demonstrated under the microscope.

It seems to me quite reasonable to suppose that the protoplasmic substance composing the epithelial cells lining the alimentary tract has for one of its vital properties the power to draw into itself the soluble and diffusible proteids, glucose and salts, and to discharge them into the venous capillaries of the entero-hepatic circulation, and that by this channel they reach the liver. As the proteids, sugars, etc., are in the liquid state we cannot follow the transit through the cells as we can the fatty particles, but reasoning by analogy we may assume that the process occurs. That they do pass to the liver is unquestioned.

The intestinal secretion by this method of tabular arrangement is narrowed down to that fluid which is secreted by the simple follicles and the glands of Lieberkühn. It is, however, from the latter class that the active ingredients or ferments originate. The succus entericus, as you will readily see by referring to our table,[1] is a limited secretion, but still one which in itself contains four active principles.

The *first*, or diastatic ferment, differs from those already described in that it does not form maltose, but converts maltose into glucose, completing, as it were, the diastatic action of the ptyalin and amylopsin. Its action is secondary and somewhat limited.

The *second*, or proteolytic ferment, has for its function the property of converting fibrin into a peptone. The origin of this ferment in the glands of Lieberkühn appears to be somewhat in doubt, being traced by some to Brunner's glands. That such an action is effected by the compound juices of the intestines there seems to be little if any doubt.

The *third* ferment, or invertin, is probably the most important of all the ferments of the succus entericus. Most of the sugar which we take as food is, as you know, in the form of cane-sugar and not glucose, and practically speaking little or no glucose is taken with the ordinary food-stuffs. Another noticeable fact is that few physiologists give us any information regarding the fate of the cane-sugar after it has passed the œsophagus. We are taught that it cannot pass into the blood in its original form, but we are not told that it passes as sugar from the anus; consequently what becomes of the large amount of cane sugar ingested daily was formerly a doubtful question in my mind. But the question is now clearly and satisfactorily explained by this inverting-ferment which changes the cane-sugar into an absorbable glucose.

A *fourth*, or milk-curdling ferment, is also spoken of in connection with the intestinal fluid. Whether this is a direct product of the intestinal glands, or originates from some of the other secretory glands already described, is an undecided question. There seems to be, however, no doubt that when the succus entericus is added to fluid milk it precipitates the caseine, and that if any milk reaches the intestine in a fluid state the caseine is there precipitated and placed in a favorable condition to be acted upon by the peptonizing ferments and converted into a diffusible peptone.

We now come to the study of the most interesting of the digestive fluids, and the one which is least accurately understood, namely, the bile. If viewed from our combined physiological knowledge, and that derived from close clinical observation, we are enabled to speak with a much greater degree of accuracy than can be obtained in any other way. Experimentally, it is almost impossible to prove positively the action of the biliary fluid, for the moment a biliary fistula is established and the bile turned from its natural channel, all the functions of the body are so thoroughly disturbed that the most contradictory evidence is obtained. Nevertheless, the knowledge derived in this way, together with clinical and pathological observations, has enabled us to formulate the following actions of the bile. The ordinary physical and chemical properties need not be considered in detail, as it is the physiological actions which concern us most. These actions are quite numerous and not necessarily due to contained ferments.

First: It has an emulsionizing action, that is, it acts upon neutral fats and minutely subdivides the oil-globules so that they can be easily taken up by the epithelial cells and discharged into the lacteals. It does not appear to have the property of splitting fats into their component parts—a fatty acid and glycerin—but when freely mingled with the biliary fluid, the fat is placed in such a condition that the steapsin of the pancreatic fluid can more easily separate it into a fatty acid and glycerin, and form a soap by the union of the soda and fatty acid.

Second: The bile contains a diastatic ferment which has for its action the conversion of starch and glycogen into glucose.

Third: Taken as a whole, the bile may be regarded as a stimulant, producing peristalsis of the intestines, thus tending to favor absorption and prevent constipation.

Fourth: The bile-acids in particular are stimulants to the small muscles contained in the villi, so that by the contraction of these muscles the contents of the lymph-spaces are emptied toward the larger and deeper lymphatics, leaving those in the villi empty and in a position to absorb more. Regarded in this light the lymph-sacs of the villi are little pumps which are constantly pumping the fat out of the epithelial cells and discharging it into the deeper lacteals to be passed on to the general circulation.

Fifth: The moistening of the epithelial cells with bile seems to be necessary for their vital activity, enabling

[1] THE MEDICAL NEWS, January 10, 1891, p. 31.

them to take up both glucose and peptones much more rapidly than is the case when they are deprived of a free supply of bile. The bile seems also to stimulate a watery flow from the intestinal follicles, which together with its tendency to excite peristalsis favors a free and easy passage of the intestinal contents into and through the colon. By some the bile is spoken of as a lubricant to the colon, which combined with the other effects, favors free movements and prevents constipation.

Sixth: The biliary fluid prevents decomposition in the alimentary tract and may be looked upon as Nature's chief antiseptic. This assertion is sustained by the rapidity with which decomposition occurs whenever the biliary secretion is impaired, totally arrested, or changed in quality. Under these circumstances we notice at once a tendency to persistent constipation, clay-colored stools and the distention of the intestines with gas. If the quantity of bile is abundant, but of poor quality, there is a tendency to black, tarry, and burning stools, with some tympanites, and fermentation and incomplete digestion of the food-stuffs.

Seventh: I think we are justified in assuming that the bile and its contained ingredients aid very materially in the final solution of the albuminoids, and their conversion into diffusible peptones. This view is entertained after a careful clinical study of a large number of cases which has clearly shown that unless the old bile and that of poor quality be expelled from the system, and its place taken by new bile, and that of a better quality, the digestive disturbances cannot be overcome; but that so soon as this change is effected digestion and assimilation become perfect and nutrition is carried on normally. This is conclusively proved by the fact that the products of oxidation found in the urine rapidly change from an excess of uric acid, oxalates, and urates, to urea, carbonic acid, and water.

Having by the action of these various fluids and ferments placed our food-stuffs in a condition in which they can be removed from the alimentary canal, we find the fats going by the way of the lymphatics and thoracic duct to the vascular channel, and thence poured into the blood-current at the junction of the left internal jugular and subclavian vein. From here they pass as fats through the left bronchio-cephalic and superior vena cava to the right auricle on to the right ventricle, and through the pulmonary arteries to the lungs. In the lungs the fat in its original form appears to be acted upon by the oxygen and changed, so that it can no longer be recognized as such in the blood. It yields in its various transformations, heat and energy to the system, lubricates and protects various parts of the body, and is finally eliminated as carbonic acid and water. The sugars and peptones pass by the entero-hepatic or portal system of vessels directly to the liver, where they are variously changed by the hepatic cells and distributed to various parts of the body.

The changes wrought upon the glucose, peptones, etc., are perhaps best discussed under the action of the liver, and may be considered under seven headings:

First: The so-called glycogenic function or action. When speaking of this function it is commonly asserted that the hepatic cells have the property of attacking the glucose, changing it into glycogen, and storing it, then changing it back into glucose to be finally lost in the system and oxidized into carbonic acid and water. This storage-house action of the liver I have never been able to comprehend, for the simple reason, that in experiments, unless the liver is abstracted with lightning-like rapidity, all the glycogen has vanished. My idea of a storage-house has been of a much less transitory or visionary nature. It has always seemed to me that there was no storing-up of glycogen, but rather that the glucose is converted into antecedent products of incomplete oxidation, varying in kind and quantity, but ultimately being oxidized into carbonic acid and water. That occasionally, and perhaps always, glycogen in varying quantities is one of these antecedent products and has been more frequently or is more easily obtained than any of the others, has led to its being looked upon as a stored-up product. Much, however, of the glycogen produced in the system is probably developed from the nitrogenous products, and when oxidation is incomplete it passes as glycogen, or in some other form of antecedent product, to the kidneys, where it is seized by the renal cells and discharged into the uriniferous tubules, giving rise to the condition known as diabetes mellitus.

Second: The liver has its bile-secreting function; that is to say, the hepatic cells produce and discharge into the minute biliary ducts a complex fluid of neutral reaction, which flows on into the larger hepatic ducts, where it is joined by the fluid from the gall-bladder. The function of the gall-bladder is to store up any superfluous production of bile during the interval of digestion. That which accumulates in the gall-bladder contains a varying quantity of alkaline mucus, so that the bile which flows into the duodenum is a thick, tenacious, and somewhat alkaline fluid, while that secreted directly from the hepatic cells is a thinner, more watery, neutral fluid. Having reached the intestinal tract it produces the effects we have already gone over in connection with the functions of the bile as a whole.

Third: The liver is spoken of as having a bile-excreting function—that is, the hepatic cells seem to have the power to attack certain medicinal and other substances which reach the liver through the entero-hepatic circulation, and act upon these poisons in such a way that they are prevented from passing into the general circulation, and are discharged into the minute biliary ducts. From there they pass to the intestines, and, finally, out of the body with the fæces. In this way the system is protected from the poisonous effects which would occur if such substances passed at once and rapidly into the general circulation.

Fourth: The peptone-destroying action of the hepatic cells is somewhat similar to the action just described, in that it destroys the peptone which is now regarded as a ptomaïne and a deadly poison if permitted to reach the general circulation and nerve-cells in an unchanged form. This action differs from the one just described in that the peptone is not excreted from the system with the bile, but is transformed into another, and unquestionably inert, form of albumin. This assertion is sustained by the fact that the portal blood contains a large percentage of peptone, while in the blood of the hepatic vessels we find no peptones, but an increased amount of serum-albumin and globulin. If, however, for any reason this peptone-transforming power is impeded or arrested, and the peptones are permitted to gain access

to the general circulation, symptoms of poisoning are developed in proportion to the amount and rapidity with which the ptomaïnes reach the general system, and also the rapidity with which the excretory organs can expel them from the body. If the quantity discharged into the general system be small and almost as rapidly excreted, the only abnormal symptoms may be a little lassitude, headache, drowsiness, loss of appetite, and high-colored urine. If, on the other hand, they pass into the circulation very rapidly and are eliminated slowly, the symptoms will be more intense; the headache may give place to marked delirium; drowsiness to coma, with nausea and vomiting, constipation or diarrhœa, and scanty and high-colored urine, until, finally, the case terminates in death, with symptoms simulating uræmic or toxæmic poisoning. I believe that all of that host of vague and often ill-defined "bilious" and "neurasthenic" symptoms are best explained by the passage into the general circulation and the incomplete elimination from the body of an almost innumerable number of ptomaïnes and leucomaïnes—products of incomplete nitrogenous oxidation. These poisonous elements circulating in the blood act differently upon various parts of the nervous system and functions of the body, and afford the most rational, comprehensive, and conclusive explanation of an almost innumerable variety of symptoms, sometimes vague and sometimes definite, which are often classed as neurological, but which can be dispersed only by correcting the digestive and hepatic functions. This view is also largely sustained by the known fact that, between serum-albumin as introduced into the body, and its most complete form of oxidation—urea, twenty-eight nitrogenous compounds have already been discovered, and traced into the urine, some of which are deadly poisons. How many there may be yet undiscovered it is hard to imagine, but in time probably many more will be revealed which will make many things that are now but vaguely surmised, actual and thoroughly-demonstrated facts.

Fifth: The liver or hepatic cells are furthur spoken of as having a general ptomaïne- or leucomïane-destroying power besides the peptone-decomposing; that is, they attack all forms of nitrogenous, alkaloidal, and basic substances which may be taken up with the food-stuffs by the entero-hepatic circulation, and convert them, like peptones, into inert substances that can be further utilized for the benefit of the system, or else discharge them with the excreted bile, to be passed out of the system with the fæces. The nitrogenous, basic, and alkaloidal substances developed in the system are probably acted upon in like manner and prepared for excretion. This transformation of ptomaïnes, leucomaïnes, and other poisons by this hepatic action, with the general disturbances in the hepatic functions and in the oxidation processes of the body, together with the general irritation of the increased effete material which is not eliminated from the system as rapidly as it is formed, has always appeared to me to be the true source of our increased bodily heat in disease. All antipyretics, unless they tend to retard these complex and abnormal processes, and bring about in their place normal phenomena, make the condition worse rather than improve the abnormal physiological state. If we can find an antipyretic that will prevent the introduction into, or the development of these poisons within the system, improve the functional chemico-physiological action of the hepatic cells, improve general nutrition, decrease the amount of effete excretory material circulating in the blood, and stimulate the excretory organs to greater activity, then we shall have a true antipyretic. At present, however, no such substance has been found, and it is doubtful if it ever will be. By the judicious administration of various substances we can, in a great measure, modify and overcome this complex problem, and, by so doing, we can very materially reduce the intensity of all infectious diseases and lower their mortality.

Sixth: The hepatic cells are thought by some to have the power to absorb and digest microörganisms—what is known as the phagocytic action. This theory, however, is not so well substantiated as those we have already discussed, but it is quite within the range of possibility that such an action is effected by the hepatic cells. If the microörganisms are not supplied to the liver in too large quantities, they are destroyed by this phagocytic property of the hepatic cells and the system preserved from damage by their presence. If, however, they are carried to the liver in large quantities, this phagocytic function is worn out or overcome, and the system at large succumbs to the influence of the microorganism. The destruction of the germs, however, is more generally attributed to the specific condition or the reaction of the fluids of the body, and not to the digestive action of the protoplasmic masses; at the same time, this protoplasmic destruction of microörganisms, especially in the liver, is in keeping with many of its other chemico-physiological actions, which gives us reason to think that in time we may have more proof of this theory. At any rate, we must go back to the hepatic cells for the chemico vitalizing action upon the blood and through it to all the other fluids of the body.

Seventh: Although this is not included in our table, the liver may be very justly credited with the function of attacking all the food-stuffs and preparing them by the chemico-physiological action of its contained hepatic cells for general distribution throughout the system to sustain the growth, development, and vital actions of the body. Having served their purpose, all the products of tissue-waste come back to the liver as excrementitious substances, there to be acted upon again by the hepatic cells and transformed into antecedent products for final conversion and elimination from the body by the vital action of the various excretory organs, under the form of complete excrementitious substances, such as urea, kreatinine, uric acid, carbonic acid, and water. This action of the hepatic cells may be compared to that of the postal clerks of a large central office, who sort all the mail that comes into the office and start it upon its way, both to the nearest and to the most remote parts of the world. After reaching its destination, it comes back in the form of a reply to the same central postoffice, there to be re-sorted and again sent to its final destination. The mail represents the food-stuffs as they pass through the liver and on to the various parts of the body, as nutriment, and return again to the liver as excrementitious substances. In the liver, as in the post-office, one set of hepatic cells may attack and transform the food-stuffs for distribution throughout the body, while another set may attack the returning excrementi-

tious products and distribute them to their proper organs for elimination. Each individual cell, however, like each individual postal clerk, may be capable of performing both kinds of work, but, for certainty of action and quickness of dispatch, a given kind of work is assigned to a certain set of cells or clerks, yet all are contained within the same walls. The material to be acted upon in each case comes in and goes out through the same channels or doors. Considered in this light, I think we have a far more comprehensive idea of the amount of work, and of the method of its performance, that can be accomplished by the many millions of hepatic cells. We realize at a glance, as it were, the great importance of the liver; we see how a disturbance of its functional activity must disturb the accuracy of action throughout the whole animal economy and give rise to a great variety of symptoms.

Having reviewed the chemico-physiological action of digestion in this complete and continuous manner, I think that you all can accurately appreciate where the major part of the work is accomplished. You now see that the stomach has comparatively little work to do; that very much the larger part of what may be classed as purely digestive and preparatory to absorption is performed in the intestinal canal. Here we find that for the complete accomplishment of this part of the work, and the ready absorption of the liquefied and diffusible products, we are dependent upon the proper quantity and quality of biliary fluid. For this reason I have for a long time been accustomed to look upon this disturbance in the bile-producing function as one of the chief, if not the chief factor, in all forms of digestive difficulties. As we reach the liver, we find much work to be done there, which if imperfectly performed places the entire animal economy in an abnormal condition.

From a careful study of these physiological facts and close clinical observation, I have come to the conclusion that a pure and simple gastric "dyspepsia" is an exceedingly rare occurrence; that in the vast majority of cases the greater part of the trouble originates in the intestines and liver; and that when we do have gastric symptoms they are due to local causes acting upon a poorly-nourished gastric mucous membrane. The truth of these statements is quite perfectly illustrated by our patient to-day.

In my next lecture I will take up the symptoms a little more concisely, together with the treatment of these all-important cases.

ORIGINAL ARTICLES.

HYPERTROPHY OF THE TONSILS.[1]

BY T. HILLIARD WOOD, M.D.,
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HYPERTROPHY of the tonsils has occurred at all times with sufficient frequency to claim the serious consideration of surgeons, but the treatment adopted for its relief has been subject to many variations.

The mucous membrane covering the tonsil presents the openings of from twelve to fifteen follicles, the function of which is to secrete a fluid that lubricate the bolus of food in deglutition. These follicles penetrate into the tonsils and terminate in blind extremities. Surrounding the cæcal extremities of the follicles is a quantity of adenoid tissue, and in this adenoid tissue we have, as a rule, the beginning of the tonsillar hypertrophy. The arteries supplying the tonsils, though numerous, are not large, and would not, therefore, if cut, cause troublesome bleeding.

The causes giving rise to hypertrophy of the tonsils may be divided into predisposing and exciting. Of the predisposing influences few are so potent as age. Hypertrophy of the tonsils is essentially a disease of children and young adults. Although rarely congenital, it is frequently observed in the earlier years of life, but more often between the fifth and twentieth years. Not more than one case in ten is older than thirty years, and beyond the fortieth year it is rarely observed. All writers agree that among the predisposing causes a cachectic state, particularly that due to struma, is prominent. Sex also has its influence, for hypertrophy occurs about twice as often in males as in females.

Among the exciting causes may be mentioned acute tonsillitis, pharyngitis, and obstruction of the posterior nares, as by a polypus. Syphilis, either congenital or acquired, may produce chronic inflammation and enlargement of the tonsils. The hypertrophy may arise from diphtheria, scarlatina, measles or smallpox, and difficult dentition, as occurs in cutting a wisdom-tooth, may also cause it.

The enlargement may be seen at once by depressing the tongue and looking into the fauces. The degree of hypertrophy varies in different cases, from the slightest increase to the size of a guinea-hen's egg, when the tonsils may almost meet in the median line. The hypertrophy, though generally affecting both tonsils, is usually greater on one side than on the other. The enlarged tonsil produces the feeling of a foreign body in the throat, and consequently a desire to swallow.

The effect of the enlargement on the features is well illustrated by Mackenzie, who says: "We often predicate the existence of enlarged tonsils as the child, with open mouth, drooping eyelids, dull expression, and thick voice enters the consultation-room." Slight enlargement of the tonsils seems compatible with good health, as the affection is often not noticed by the patient until the overgrowth mechanically interferes with the functions of the pharynx.

The enlargement causes narrowing of the pharynx with difficult inspiration and expiration, the inspiration being the more embarrassed. This obstruction to inspiration necessitates an extra exertion of the diaphragm, and the constant and increased traction of the diaphragm on the thoracic walls

[1] Read before the Tri-State Medical Association, October 15, 1890, held in Chattanooga, Tenn.

causes narrowing and constriction of the chest corresponding to the attachment of the muscle. This "pigeon breast" is best developed when the tonsillar enlargement occurs in young people in whom the osseo-cartilaginous framework of the thorax is soft and yielding.

The enlarged tonsil, by filling up the pharynx and obstructing free nasal respiration, causes the patient to breathe through the mouth, both when awake and during sleep. The current of air through the nose being thus diminished, the nasal secretions are not dried up and blown out as in health, but remain to decompose and set up inveterate nasal catarrh.

Again, the enlarged tonsil is a frequent cause of impaired hearing. According to some, this result is brought about by the organs pressing upon the opening of the Eustachian tube, and so interfering with the ventilation of the middle ear. Another explanation, which is more probably the correct one, is, that the weight and traction of the tonsil produce patulency of the Eustachian tube, the inflammation of the nasal mucous membrane extending through the tube and causing the deafness. The movements of the soft palate and pharynx being interfered with, the voice is altered in tone, becoming thick and guttural. Sleeping with the mouth open, snoring, and awakening to find the mouth and pharynx dry, are frequent symptoms of enlarged tonsils.

The obstruction to deglutition, though less harmful than the obstruction to respiration, interferes with nutrition. Thus the patient, if a child, grows up in bad health caused by a diminished supply of oxygen and food. Perversion of the sense of smell, probably due to the accompanying catarrh, not infrequently occurs with hypertrophied tonsils. Frequent attacks of acute tonsillitis, upon slight exposure to cold, are often observed.

Most cases of enlarged tonsils have their origin in some acute inflammation of the glands previously mentioned. The lymphoid tissue of the tonsil is probably causative in maintaining the hyperæmia, until the stage of hypertrophy is developed. Enlargement of the tonsil is a true hypertrophy, an increase in the amount of each constituent element. The epithelial layer over the tonsil is thickened, and the mucous layer is infiltrated with lymphoid cells and new tissue-elements. But the great increase in the size of the organ is due to the development of connective tissue.

Enlarged tonsils do not directly threaten life, although some isolated cases of death from suffocation are on record. If left to themselves, the new tissue will, in time, undergo contraction, and by the age of thirty years, or soon after, the hypertrophied gland will have returned to a small size. But although all cases tend to spontaneous cure, they produce discomfort, retard the growth and development of the child, and during inflammatory affections of the air-passages become directly dangerous to life. For these reasons they should receive prompt and efficient treatment.

The treatment for the reduction of enlarged tonsils is divided by Mackenzie into local, constitutional, and operative.

Local treatment.—If the enlargement be due to swelling of the mucous membrane, or to engorgement and congestion of the tonsil, the application of astringents may be of service. The most useful local remedies are the subsulphate and perchloride of iron, in a strength of from one to eight parts in water or glycerin, and alum or tannin in powder. But where there is real overgrowth, the remedy, as Mackenzie observes, must be of a destructive character, and escharotics must be used. Among escharotics, "London paste" is useful and should be applied once or twice a week. This will produce a slough, and repeated applications will reduce the gland to a normal size. The treatment with escharotics, while effectual in the end, is quite tedious and painful. When for any reason excision cannot be performed, Donaldson, of Baltimore, incises the tonsil, and inserts into each incision a crystal of chromic acid.

Constitutional measures to effect reduction of the tonsils include such remedies as iodide of potassium, cod-liver oil, and the general tonics, to combat the diathesis upon which the enlargement often depends.

Operative treatment. — Although the writer has used most of the foregoing remedies in many cases, he has not yet derived from any of them decided reduction of the enlarged gland. This reduction can usually be brought about only by the use of some of the operations devised for that purpose. The operation of excision of the tonsil is a very old one, having been clearly described by Celsus during the days of Christ. Since then the popularity of the operation, as a surgical procedure, has been subject to much fluctuation, being at times highly recommended, and at other times condemned. The arguments against it were the difficulty of performance and the danger of hæmorrhage. In 1757, however, Caqué proved that the dread of hæmorrhage had been much overrated, and that the resulting wound readily healed. From that time the operation has grown in favor, and the methods of its performance have been numerous, almost every operator varying the procedure.

Of all the operations, excision by the tonsillotome is most popular, although many surgeons, among them the writer, prefer the bistoury and vulsellum forceps. The operation is rendered painless by

applying to the tonsil a solution of cocaine, and by injecting with a hypodermic syringe a few drops of the same solution into the substance of the gland. The cocaine also checks hæmorrhage. As a rule, general anæsthetics should not be used.

The only danger of tonsillotomy is the very slight one of hæmorrhage, and this has been held by conservative men as sufficient to condemn the operation. Let us examine into the matter of hæmorrhage after tonsillotomy. Sajous says: "Profuse hæmorrhage occurs in perhaps one out of every five hundred operations, while an alarming flow does not occur in one out of a thousand." Mackenzie, during a long experience, can recall only one case in which hæmorrhage seemed to endanger life. The records in the Surgeon-General's Office at Washington, D. C., for the past twenty-five years, show only two deaths from hæmorrhage after tonsillotomy, and in one of these, a child eight years old, the cause was an anomalous course of the internal carotid. In the other case the patient was twenty-five years of age.

Statistics show, however, that free bleeding occurs in about one per cent. of cases, and in one thousand operations collected by J. Solis-Cohen there were four deaths. But while the danger from hæmorrhage in children, in whom the tonsillar tissue is loose, and therefore readily collapses and arrests bleeding, is almost *nil*, yet in adults the fibroid elements, now in excess, and which relatively increase as age advances, form a tissue less favorable for the retraction and closure of the cut vessel than the spongy mass of a young tonsil largely composed of lymphoid tissue. (Wright.)

This explains why the cases of alarming hæmorrhage occur almost entirely in adults. Many operators of large experience have never lost a patient from hæmorrhage, and have only seldom seen it become severe. There are no large vessels supplying the tonsil, and experience proves that the bleeding after tonsillotomy ceases spontaneously, or is easily controlled by the application of nitrate of silver, by iced-water gargles, or by cold cloths applied to the neck. Should the bleeding be severe we may use Mackenzie's gallo-tannic acid paste, perchloride of iron, torsion, pressure directly applied, ligature of the stump, or the actual cautery. Should these fail the common carotid may be ligated —recovery took place in three recorded cases in which this was done. In two of the six fatal cases referred to above, the common carotid was not ligated. So that the alarming danger of hæmorrhage resolves itself, according to the records of the past twenty-five years, into two fatal cases, and there is no evidence to show that the previously-mentioned means to arrest bleeding were employed in these two cases. Still, bearing in mind the fact that all the fatal cases have not been reported, it is evident that the entire number, after all, is not so small.

To diminish to a minimum the danger from hæmorrhage, we have the comparatively bloodless operation by the cold snare, operations by ignipuncture, and by the galvano-cautery amygdalotome. Of these the galvano-cautery amygdalotome seems preferable, and is highly recommended by Wright, of Brooklyn. Ignipuncture is tedious, requires repeated applications, and is attended by considerable pain. Moreover, it cannot be employed in the cases of refractory children.

HOW A GENERAL PRACTITIONER MAY TREAT CHRONIC ATROPHIC RHINITIS.[1]

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FROM the time when the Chinese Emperor, Hoang-ty, 4500 years ago, first described specific ozœna, until the present day, the treatment of chronic atrophic rhinitis has been, more or less, the bugbear of the general practitioner of medicine. The disease now lacks many of its mystifying elements, but even in this enlightened day it remains a stumbling-block in the practice of many physicians.

Notwithstanding the great amount of literature which has resulted from the painstaking study of this disease, the vast majority of doctors are indifferent, some perhaps ignorant, as to its proper treatment. Some do not believe that an iota of benefit can result from treatment of any kind; others declare that they have no desire to treat it; while still others, by temporizing, hold their patients day in and day out, in the vain hope that some kindly providence may relieve doctor or patient. Amid all this array of indifference, disinclination, and lack of knowledge or of its application, is it strange that the poor sufferer should read, with a shudder, the advertisements which describe his symptoms so exactly, and which alarm him by unnecessary warnings of dangers which never occur? Is it to be wondered at that his mind becomes filled with visions of consumption—visions which, by reason of their indistinctness, magnify the evils thus portrayed? Is it remarkable that he should swallow with avidity such unwholesome morsels as this? "The microbe of catarrh, in your sleep, crawls down your throat, and, coming in contact with your lungs, produces consumption." Is there occasion for further wonder that the poor, bewildered mortal, whose fears have now changed his nose into a mountain of woe, should seek his family

[1] Read before the Medical Society of the Missouri Valley, Kansas City, Mo., December 18, 1890.

physician, and receiving the unsatisfactory advice—which in many cases he will get—is it strange (say I) that he should place himself in the hands of a quack? I think not. From a popular standpoint, at any rate, the charlatan who loudly boasts of his cures, and who points out the evils that may result, knows far more than the dilly-dallying doctor. Here lies the trouble—doctors imagine the nose is beyond their ken—too far removed for their comprehension; in fact, many do not hesitate to say so, though these same doctors would never admit a lack of knowledge in the treatment of a cervicitis or an endometritis, and yet the organs concerned in these diseases are far more difficult to examine than the nose.

Thoughts such as these are calculated to make a specialist ponder, and to seek for some plan of benefit. That some good may come from a tacit and clear statement of the treatment of this disease, I am sure, and that the general practitioner will, by the application of a few general rules, be able to benefit almost all of these cases, I am certain. I have seen this very thing exemplified in my own students in the Marion-Sims College of Medicine, to whom I have assigned cases for treatment in the Clinic, with highly-satisfactory results. If students are thus capable of treating nasal catarrh, I feel certain that the great body of conscientious practitioners of medicine can do far better. Many means have been devised and many remedies have been suggested for the treatment of this very refractory disease, but as its theoretical consideration forms no part of the subject of this paper, they will not be considered. Therefore the radical treatment of the disease, requiring, as it does, an extensive knowledge and technique, will not receive attention. That the disease is ever entirely cured is still a controvertible question. Reports have been made of cures by cauterization with chromic acid and the galvano-cautery, and by galvanism of the nasal mucous membrane.

From the nature of the disease, and the abnormal secretions which it causes, one can easily understand that two features of treatment are indicated, viz: cleanliness and stimulation—cleanliness so that there can be no irritation from the presence of scabs, and for the thorough application of medicines; and stimulation to counteract the passive inflammation, and to cause the mucous membrane to approximate more nearly the normal by filling it with wholesome blood.

Cleanliness does not mean promiscuous douching or spraying of the nose. The greatest care must be taken to remove every scab and particle of abnormal discharge. This can be done by the general practitioner readily enough, and his armamentarium need not be very extensive. A lamp—a student's lamp being preferable—a head-mirror, a nose speculum, a small cotton applicator (a knitting-needle with one end roughened will answer) constituting an equipment not elegant, but sufficient. The cost, exclusive of the lamp, is little enough, being less than $4. Cotton, absorbent or borated, should be on hand, as well as plenty of Dobell's solution, or the following modification, which I like better:

℞.—Sodii bicarbonatis } . . āā ʒij.
Sodii biboratis }
Listerine or "katharmon" . . ℥ss.
Aquæ q. s. ad. . . . . ℥viij.—M.
Sig.—Nosewash.

To the list I should perhaps add some sort of atomizer or post-nasal syringe, costing in either case not more than $1.25. However, one could get along without either of these. The nose should first be sprayed out with the solution the formula of which I have just given (better warmed), or by means of the post-nasal syringe the cavities can be washed out from behind. Understand, however, even this does not constitute true cleansing of the nose, for after this has been done the work really begins. The light being reflected into the nose, held open by means of a speculum (Knight's modification of Duplay's preferred), the probe, to which a pledget of cotton is attached, is made to dislodge and remove each scab or portion of discharge which is presented to the view. Anyone can do this, for anyone can see the scabs and can with ease remove what he sees. This accomplished the nose is clean, and the first essential part of treatment has been applied.

For the stimulative plan of treatment various drugs have been recommended, out of which I select menthol, thymol, and eucalyptol as having been most efficacious in my hands. I have used menthol more frequently than any of these agents, and have been so well pleased with its action that I should be unwilling to exchange it for any other remedy. The following is the customary formula:

℞.—Menthol . . . . . gr x.
Liquid albolene . . . . ƒ℥j.—M.
Sig.—Spray for the nose.

The amount of menthol may be increased to twenty grains or even one drachm to the ounce. This, or thymol, ten grains to one ounce of liquid albolene, or eucalyptol, ten drops to one ounce of liquid albolene, should be well sprayed into the nose, first directing the patient to breathe through his mouth, thereby shutting off the oro-pharynx and causing the spray to pass out of the other nostril. The first sensation is that of warmth, and no little itching is frequently occasioned; but this is soon succeeded by a feeling of coolness and comfort in the nose which is gratifying to the patient. While

the menthol, thymol, and eucalyptol have a stimulative effect, the liquid albolene is not void of benefit. It takes the place of vaseline, but possesses nothing of the almost nasty characters of the latter. By means of the spray, the oily albolene is thrown over a large portion of the mucous membrane, and by covering it with an oily film, aids not a little in its improvement. This cleansing treatment of the nose should be resorted to every day, if possible, for some little time; later, the intervals may be lengthened. It is useless to attempt to produce any permanent or even transitory improvement, by treating the nose twice a week or less; three times a week is seldom sufficient at the outset.

Nor is this all there is in the treatment. The patient should be directed to clean his nose three or four times daily, by snuffing up Dobell's solution or the modification which I have given, and thereafter using a spray of menthol, thymol, or eucalyptol and albolene. A special form of atomizer must be used, because all atomizers do not act with oily solutions. Each patient must provide himself with one, and use it three or four times daily. The Codman & Shurtleff No. 356, or the Brooklyn Throat Hospital Atomizer, will answer. The latter is better for the doctor, in that having three nozzles it may be used for the nose, pharynx, or larynx.

Of late I have been using a new atomizer, lately designed and manufactured by the A. M. Leslie Surgical Instrument Company, of St. Louis—the Acme Vaseline Atomizer; in fact, I now prefer it to any other kind. It has the advantage of simplicity and cleanliness. Though intended as a vaseline atomizer, it can be used with the greatest satisfaction for the spraying of liquid albolene. I would again urge that the atomizer be used systematically, thoroughly, and regularly. It is surprising how much better the patient will become under this treatment; the excessive scabby discharge ceases, the odor disappears, the hawking diminishes, and the patient's mind turns to other thoughts than an untimely death from the fancied change of catarrh into consumptton.

It is well to state one danger which may occur not only from this form of treatment, but in any case where douching of water is used: I refer, of course, to otitis media, catarrhal or suppurative. Where there is the slightest tendency to this disease, one must be guarded and must avoid the douche, and sometimes the spray. In such cases, the only recourse is to remove the scabs as well as possible by means of a probe and pledget of cotton.

Very naturally there are other plans of treatment which are not to be despised. I desire to make no reflection whatever upon any other method. This I do say, however: the method which I have detailed is one which must commend itself to everyone. It is simple in its application, and sufficiently easy in detail as to be within the range of every practitioner of medicine.

3148 LOCUST STREET.

A CASE OF ACTINOMYCOSIS.[1]

BY A. J. OCHSNER, M.D., B.S., F.R.M.S.,
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THIRTEEN years ago Bollinger showed that the disease in cattle know as "lumpy jaw" is due to a parasite, and a year later Israel found the same parasite in the discharge from an abscess connected with the pleural cavity in a woman. The parasites were named actinomyces, and the disease actinomycosis.

The disease is very common in the cow, less common in the pig and horse, and, according to recent observations, not very rare in man. It most commonly attacks the tongue ("woody tongue" of cows) and the lower jaw, but has been found in every organ, reaching the different parts of the body, either by continuous growth or by being carried through the blood- or lymph-channels from the original focus.

The parasite is a fungus, not yet permanently classified, composed of radiating filaments, somewhat club-shaped at the ends, but frequently split into a number of smaller parts. Under the microscope it can be recognized with a power of 250 diameters, but it requires an immersion lens of from four to six times this power to make apparent its finer subdivisions. One can, however, recognize collections of these fungi with the naked eye. They form small, pale-yellow granules, reminding one of mustard-seeds which have been immersed in liquid.

When the location of the infection favors the formation of a tumor of considerable size, the tissues composing the growth are also characteristic to the naked eye. They resemble loose, flabby, granulation-tissue interspersed with the characteristic yellow granules. Each of these granules contains a number of microscopic spherules, and each of these is one of the fungi. The fungi can be readily demonstrated by immersing one of the granules in a ten-per-cent. solution of potassium hydrate in water, and placing it under the microscope. The pressure of the cover-glass crushes the spherules and makes them somewhat irregular. The parasite can be stained most conveniently by Gram's method, either on the glass slide or in sections, but for diagnostic purposes staining is not necessary.

The manner in which the parasite enters the body is often obscure. It may enter through an external wound, through a hollow tooth or an abra-

[1] Read before the Illinois Microscopical Society.

sion in the mouth, through an abraded surface in some part of the alimentary canal, or by inhalation through some part of the respiratory tract. In many cases infection might easily have been prevented if it were generally known that "lumpy jaw" in cattle can be transmitted both directly and indirectly to man, and that the disease in man is quite as fatal as in animals. Very frequently the manner of infection can be directly traced. A farmer or drover will, for instance, use the jack-knife that he carries in his pocket, for the purpose of opening a tumor in a case of "lumpy jaw," and later will use the same knife for cutting his own food. Again, such persons handle these animals and then eat without washing their hands, or they drink out of pails or from pumps which have come in contact with diseased animals, or use spears of infected hay or straw as tooth-picks.

It is almost certain that the parasite lives and thrives on the surface of several plants, and that it is frequently introduced together with parts of these plants or by coming in contact with some abraded surface, and that in animals infection very frequently takes place from wounds of the gums, which become filled with these parasites while the animal eats grass, hay, straw, or grain on which the parasite has developed. So much for our present knowledge of this disease.

The case that I have under observation at present is a gentleman fifty-three years old, a farmer by occupation, healthy until eight months ago, when he began to suffer from severe continuous pain in the region of the left antrum of Highmore. He had four decayed teeth removed from the left upper jaw but was not relieved. Soon after this an abscess formed and pointed on the cheek at a position opposite to and a little above and behind the canine fossa. This was opened by his physician, and subsequently twice opened spontaneously before he was referred to me at the Augustana Hospital, August, 1890. When I first saw him, the skin surrounding the sinus was thickened and infiltrated, and a drop of pus squeezed from the sinus contained the characteristic pale-yellow granules which were proved to contain actinomyces.

The treatment consisted in removing all of the soft tissues which were involved, in chiselling away the outer surface of the antrum, thoroughly curetting the cavity, swabbing it out with ninety-five-per-cent. solution of carbolic acid and then packing it with iodoform-gauze. The wound healed normally from the bottom by granulations, and the patient did well until October, when an œdematous mass appeared above his left ear. I opened this and again evacuated half an ounce of pus and granulation-tissue containing the same characteristic granules in which were the parasites. This cavity was also packed with iodoform-gauze and is healing by granulation. The patient is now doing well, and unless the parasite has advanced to some other point, which cannot as yet be determined, he will undoubtedly permanently recover. Infection in this case probably took place through the patient's decayed teeth. From October, 1889, to February, 1890, he had handled and treated a horse supposed to be suffering from "lumpy jaw," and not knowing the dangers of infection had been rather careless.

Four years ago I reported a case of actinomycosis of the lungs.[1] The patient was treated with arsenic and sent to New Mexico, where, I am told, "lumpy jaw" does not occur among cattle. He lived four years, and died last June from actinomycosis of the lungs, judging from the statement of friends. No autopsy was made.

When I first treated this patient I made a number of experiments on animals, inoculating rabbits under the skin of the ear and in different parts of the body, but with negative results. The material used for inoculation consisted of the granules found in the sputum of the patient. The last experiment that I made consisted of inoculating a rat between the teeth. About two weeks later the animal disappeared, but in two months the mate of this rat died from actinomycosis of the shoulder and neck. Not having inoculated the mate, and having lost the original rat, I never reported the experiments, but, of course, it is probable that the mate was infected with actinomycosis by the inoculated rat. The rat was kept in a large room where it could easily get under some boards; it probably became ill, and hiding somewhere, died from the disease.

CONSERVATIVE SURGERY IN INJURIES OF THE FOOT.[2]

By J. T. WILSON, M.D.,
OF SHERMAN, TEXAS.

Even with the modern methods of surgery there are many feet sacrificed to a want of patience and proper management of the injuries that may have been received. It is, doubtless, true that injuries of the foot, as we have been taught, are more serious than those of the hand, because the foot is larger, and at a greater distance from the centre of circulation, and hence has less power to repair mischief, and is much more susceptible to suppuration and gangrene, yet it is very amenable to treatment. It should ever be the surgeon's earnest desire and aim to save the foot, and, if possible, in a useful shape. With the knowledge of the subject, and the resources we possess at the present day, the successful treatment of injuries of this part is more certain and satisfactory than formerly. I have seen several cases of foot injuries in which the member was sacrificed to a want of patience and good judgment—cases that in all probability would, with careful attention, have

[1] Medical Journal and Examiner, December, 1886.

[2] Read by title before the Southern Surgical and Gynecological Association, November 12, 1890.

been restored to their former usefulness. Some surgeons prefer amputation and treatment of the stump to what may seem to promise prolonged attendance upon a slowly-healing wound; but the loss of even a portion of the foot, or of several of the toes, is so serious that we should not permit our personal preferences to influence our judgment against conservative treatment when there is a possibility of the part being saved.

CASE I.—Some years ago a man came under my observation about twenty-four hours after having had his foot caught between two heavy logs. There was some excoriation, but the true skin was not broken, all of the metatarsal bones, except the fifth, and one of the phalanges of the second toe, were fractured, the internal cuneiform being displaced. The foot was greatly swollen, bruised, discolored, and painful, and the attending surgeon was of the opinion that amputation by Chopart's operation was the best treatment. But after further careful examination and consultation, the circulation appearing not to be seriously interfered with, it was decided to wait for a day or two. Under the influence of chloroform the displaced bone was pushed into position without much difficulty. The foot was immersed in hot water, carefully bathed, gently rubbed with a soft cloth and the hand, and then was enveloped in a layer of cotton-batting held in place by a well adjusted bandage and splint. The pain was much relieved, and the patient passed a comfortable night. The dressing was changed once daily after the second day, the foot being bathed and rubbed with sorbefacients, and the bandage tightened a little after each dressing. It was practicable by much care to keep the fractured ends of the bones in apposition, and thereby good union was secured. The general health of the patient was excellent. He recovered without deformity, and the foot was restored to its former usefulness.

CASE II.—Another case was that of a boy, whose foot had been caught under one of the wheels of a heavy truck, the uneven surface and the soft ground doubtless protecting the member from a much greater injury than it actually received. He was taken into the office of a physician near by, who called a consultant, and after an examination under chloroform it was decided that amputation was the only remedy and I was requested to do the operation. I found upon examination a lacerated wound, about four inches long, upon the outer dorsal surface, and involving the heel; there was crepitation over the dorsal surface, but it was the crepitus of air which had penetrated the cellular tissue. I could not detect any fracture. It was then determined to envelop the injured part in an antiseptic dressing. It is needless to say that this boy's foot was completely restored to usefulness.

CASE III.—In a gunshot wound the ball, from a 0.45 calibre Colt's revolver, penetrated the instep and lodged in the scaphoid bone. Fifteen hours after the accident the case was examined, but the ball could not be found. The foot was then put at rest and cold-water dressings adopted. In five or six days the man became restless, and bundling up his foot began his occupation, that of a laborer, and though it gave him considerable pain, he would not remain quiet, or give the wound much attention. Soon after this, inflammation began in the bone, followed by suppuration and pain for many months. The bones became enlarged and tender and the tissues infiltrated, and the patient's general health failed. He was anxious to have an amputation performed above the ankle. However, I removed the diseased tissue and bone, irrigated the wound thoroughly with a solution of carbolic acid, made counter-openings in the sole of the foot and inserted drainage-tubes. The parts were kept perfectly clean, and at rest in as comfortable position as possible. Tonics and good food were administered, and the patient began to improve at once, and recovered with a useful foot.

CASE IV.—A man, while chopping wood, wounded his right foot just above the metatarso-phalangeal articulation, and profuse hæmorrhage followed, but was controlled. An aneurism of the lower portion of the dorsalis pedis artery formed, and in the following five months he had two serious hæmorrhages, which were very difficult to control. Inflammation and suppuration set in, involving the first and second matatarsal bones. It was thought by the physicians who saw him that amputation of the foot would be necessary, and he was in constant dread of hæmorrhage. I was requested to see him, and after consultation we decided to ligate the dorsalis pedis artery and remove the dead bone. After the ligation the carious portion of the first metatarsal was scraped away and the phalangeal extremity of the second metatarsal resected. Recovery was rapid. This man having valvular disease of the heart, and being somewhat prostrated from previous loss of blood, he narrowly escaped death from chloroform-narcosis.

A majority of surgeons have methods of their own for surgical operations and dressings. A new method is exceedingly rare, but many surgeons think that their own mode of doing an operation or of applying a dressing has advantages over others, and it is well that this is so, because it gives the surgeon more self-confidence and self-reliance, and enables him to do greater service to his patients. Then, too, a different application of the same principle may effect different and better results. With antiseptic methods suppuration of the foot of a healthy person can almost invariably be prevented, even though the tissues be much bruised and lacerated. By a careful attention to the injured part and the general system, by absolute rest and a judicious dressing, the bruised tissues will soon regain their normal condition if the bloodvessels be not destroyed and the circulation not entirely cut off.

An njury of the foot of whatever nature irritates the nerves, tendons, and muscles, and induces contraction, which is painful, interferes in some measure

with the circulation of the blood and retards the healing of the wound; it is, therefore, necessary in such conditions that complete rest be given, and this can be accomplished by bandages, splints, slings, and props. Position is important, because by this means comfort may be secured and the displaced parts adapted to their natural position, which is the more favorable one for repair. The circulation can be regulated by gentle, efficient massage and by changing the position from time to time. It is important to restore the circulation as soon as possible after the injury has been received, and this can be accomplished by keeping up the temperature of the part. Usually the foot placed on a level with the body, or a little higher, is the most favorable position, but it can be changed to a higher or lower one, sometimes with great benefit; when the circulation is feeble a dependent position at short intervals and for varying periods will act advantageously.

The same dressing will not answer in every case. In some injuries splints are necessary, or plaster or starch bandages; in others a simple roller or a sling is better. The dressings of cold water will do more good in some and warm or hot water in others. In some cases a liniment will serve the best purpose, in others an ointment. In many open wounds, especially if the surface is suppurating, an antiseptic unirritating powder, such as boric acid, iodoform, iodol, bismuth, oxide of zinc, powdered hydrastis, etc., will be of the greatest service. I have had no experience with the new antiseptic *aristol*.

The general system should be carefully attended to; it may be in a bad condition when the wound is received, or from confinement it may become so soon after, and this will be an impediment in the progress of repair. Attention to the secretions, to digestion and assimilation, to the functions of the liver—especially in a southern climate—skin and other organs plays an important part in the management of these cases.

In contused and lacerated wounds the best results are obtained by keeping the foot at absolute rest in a comfortable position during the first part of the treatment, by cleanliness and by soothing applications. Punctured wounds of the plantar surface are generally regarded as more dangerous than similar wounds elsewhere; complications are more common, tetanus is more frequent, and there is more trouble in causing the wound to heal. Removal of foreign substances, antisepsis, and free drainage will accomplish satisfactory results in nearly all cases.

In gunshot wounds the parts are generally much lacerated and bruised. We should persevere in our efforts to clean the wound of every particle of foreign substance, clip off all ragged edges, and convert it as nearly as practicable into an incised wound. The ligatures and sutures should be thoroughly antiseptic. The fractured ends of bones and the soft parts should be nicely coaptated and carefully maintained in position for the first few days in as near absolute rest as possible. Contusions of the bones are frequently far more serious than those of the soft parts; inflammation is more liable to be set up and to be followed by suppuration, caries, and necrosis. In bad sprains of the foot immersion in water as hot as can be borne soon after the occurrence of the injury, boiling water being added until the temperature is raised to the highest degree of tolerance, will do more than anything else to relieve the acute suffering and lessen the swelling. This should be followed by a gentle shampooing, while the foot is elevated above the level of the body until the surface is quite dry. A plaster bandage should be applied in such a way that the circulation will not be interfered with, and the foot placed in a comfortable position and retained for a few days at complete rest. Then the bandage should be removed, the shampooing again instituted, passive motion carefully and gently begun and repeated at intervals. This treatment requires good judgment and patience, but is very satisfactory, and, I believe, in those rare cases in which the safety of the foot is endangered, will often prevent serious consequences. I am of the opinion that a wounded foot should receive antiseptic treatment, whether the skin is broken or not.

I have thought that my results were much better in cases in which I thoroughly washed the whole foot in hot antiseptic solutions. The somewhat uncertain state of the surgical mind in regard to the antiseptic treatment of wounds and in the choice of an antiseptic, should not cause us to neglect these precautions. That antiseptic surgery has marked perhaps the greatest advance known to our art, the bold operations of to-day, the explorations into every cavity of the body conspicuously testify; that under its use there is a more rapid and ready union of wounds, less suppuration, and fewer cases of septic poisoning than under the old *regime*, is patent to all. In cases in which it is impossible to prevent suppuration, drainage-tubes may be used with benefit so long as they seem to be actually required, and removed as soon as they cause irritation. Some cases too, with profuse suppuration, require counter-openings in a different part of the foot to insure perfect drainage.

If a plaster bandage is too heavy, a starch or silicate of sodium bandage makes an excellent substitute. In a highly-inflamed and swollen foot ice properly applied is capable of doing much good, but should not be allowed to remain long. While poultices in the same conditions can be applied with advantage, they will, on the other hand, do harm if

not removed before they cause maceration and irritation of the skin.

Hæmorrhage should be controlled as soon as possible and clots removed, the parts cleansed of all foreign bodies, such as earth, sand, clothing, detached pieces of bone, and badly-bruised and lacerated tissues. Extreme tension is best relieved by incisions, the wounds irrigated with an antiseptic solution. Catgut is, I think, the best suture for the foot, but if not at hand, sterilized silk or flax thread may be used. I deem it an important point to have all thread used for ligatures and sutures previously well boiled and immersed in a strong solution of carbolic acid.

In bringing the edges of wounds together the sutures are frequently drawn too tight and when swelling occurs they are liable to cut their way through the inflamed tissues, and interfere with union. I have obtained the best results by changing the dressings as infrequently as is compatible with an aseptic condition of the wound.

Massage is important in the treatment of extensive wounds of the foot; it stimulates the blood-vessels, muscles, and functions of the limb. If the skin is not broken, and tension not extreme, massage will assist in the absorption of fluids.

In cases in which an operation is necessary, if there be shock, by the free use of antiseptic dressings and controlling hæmorrhage if present, the operation may be deferred until shock has been recovered from.

Immediate union should be secured, if possible, in all wounds of the foot. When, for any reason, the wound cannot be closed, it may be successfully treated by the open method, and antiseptics have rendered this mode very satisfactory in many cases. If bloodvessels and nerves are not sufficiently destroyed to cause the early death of the part, amputation should not be hurriedly performed, even though it seems improbable that the foot can be saved. While there is living tissue it should be given the chance for repair.

Resection of the bones of the foot can frequently be performed with gratifying success. Dr. Schuchardt,[1] of the German Army, in discussing excision of joints in gunshot wounds, states that "the formation of new bone is less copious under the antiseptic *regime* than formerly, which is a decided advantage, but one which is amply compensated for by the fact that the antiseptic *regime* admits of more conservative treatment."

Tendons and nerves can often be sutured, and frequently unite; and ulcers can be made to heal by scraping away all necrosed and unhealthy tissue, and by rest and antiseptic dressings. Even gangrene following extensive burns and frost-bites will often terminate surprisingly well and without the loss of the entire foot if carefully managed. The most serious consequences sometimes result from apparently insignificant wounds, and with this fact in view it behooves us never to overlook an injury brought to our notice, no matter how trivial it may appear.

The secret of success in the treatment of foot-wounds lies in vigilance, patience, and persistence, and in giving the strictest attention to all details; the disregard of which is the cause of many failures.

The temptation to make a brilliant operation through some joints of the foot may seem too great to resist; but we should not permit such a temptation to warp our judgment nor lead us to sacrifice the part. Such an operation may present an appearance of beauty and seem scientific in the highest degree to the unprofessional observer, and will probably add to the surgeon's reputation among the laity, but the consciousness of having sacrificed a part of the foot to the desire for *éclat* would, as Professor Gross used to say, "bring the blush of shame to our cheeks," whenever we should meet our unfortunate victim face to face.

[1] Annual of the Universal Medical Sciences, 1889.

THE GENERAL AND LOCAL TREATMENT OF GANGRENOUS WOUNDS AND DISEASES.[1]

BY BEDFORD BROWN, M.D.,
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THE surgical procedures in gangrenous affections, the proper stage for operation, and the propriety and necessity of operations in certain conditions, are questions already so well settled that nothing can at present be added to our knowledge of the subjects. Therefore, it is not proposed in this paper to allude to these questions, but to discuss the various methods of treatment, both of a local and general character, found by the writer to be the most efficient for the prevention and arrest of gangrene. We know that traumatic gangrene is more amenable to treatment than is the idopathic form, from the fact that the former is of a more transient nature, while the latter is usually more dependent on certain fixed organic changes, such as the arterial degeneration of old age, thrombosis of large arteries, embolism, or certain blood-changes.

Previously to the late war I determined to institute a series of experiments in every case of gangrenous wound or disease coming under my observation, on the capacity, or rather capability of therapeutic agents, and of various local and general methods of treatment to prevent or arrest the process of these affections. As gangrene is not actually a disease, but rather the sequence of disease, the

[1] Read before the Southern Surgical and Gynecological Association, November 11, 189.

direction of the treatment must of necessity be addressed to such diseases or conditions as may give rise to it, as well as to the peculiar sequence itself. It is proper here to consider briefly the various forms of gangrene in their relation to treatment. Probably the largest number of cases of gangrene are of the traumatic variety, and arise from lacerated, contused, crushed, or poisoned wounds, in which the vasomotor nerves of the part are paralyzed by the local shock, or structural damage occurs, from which blood-stasis results, and the nutrition of the parts is suspended. Here something else is needed besides antiseptics and disinfectants. Potent stimuli to the paralyzed vasomotor nerves and to vital action are also necessary. If vasomotor action can be aroused in these cases, nutrition of the injured part sustained, and disinfection accomplished, then the progress of the gangrene may be arrested.

The most important varieties of the idiopathic affection are the dry and moist forms arising from embolism or from thrombosis of a main artery. In the treatment of this class of cases the question confronts us in the beginning: Are there any means or methods that are actually capable of arresting its progress, and saving life, or avoiding the necessity of amputation? When the main artery of a part is obstructed from thrombosis, either transiently or permanently, and the distal extremity is dying from innutrition, can any method be devised by which a collateral circulation can be established to supply the place of the original circulation, reëstablish the nutrition of the parts, and arrest the process of gangrene? I feel sure that this has been accomplished, and in the course of my paper I will cite an example in which dry gangrene of the lower extremity, arising from occlusion of the popliteal artery, with absence of all pulsation in the posterior and anterior tibial arteries, and in the peroneal artery, above the gangrene, nevertheless had a collateral circulation sufficient to arrest the gangrene and save the limb so that the extensive excavation left from sloughing healed.

Hospital gangrene is probably due to a combination of influences, namely, an infectious poison acting on a wound in a constitution impaired by the various depressing influences of army-life and the hardships of war. During the recent war, in the field-hospitals under my charge, I found that separation of the wounded at great distances; their removal from house-tents, and the substitution of tent-flies under trees in high, unused localities, where fresh breezes could have fair sweep; the frequent and systematic changing of their location; the burning of all débris on the old localities; the methodical enforcement of cleanliness; and the administration of nourishing food, with the application of hot boiled water, and a saturated solution of the sulphate of zinc and dilute sulphuric acid to the gangrenous wounds, gave better results than any other method. Most of the valuable antiseptic agents now in common use were then unknown, or were not used as antiseptics. This is true of that most wonderful antiseptic, *bromine*, and while I have had no personal experience with this remedy in hospital gangrene, I have sufficiently observed its powers in other forms of gangrenous affections to convince me that it is one of the most potent agents for the treatment of this class of diseases. When diluted it possesses antiseptic and disinfectant properties, without caustic or destructive action. Here I wish to note the great differences in the method of treating gangrenous affections in ancient and in modern times. In retracing the history of the treatment of gangrenous affections the further we go back the more common do we find the use of destructive caustics, until we reach the traditional application of the actual cautery in its various forms. A single fact strikes our attention in this history, and impresses itself indelibly on our minds, and that fact is the utter failure of these violent measures to save human limb or life. The silent, painless, potent operation of the modern antiseptic and disinfectant, as they destroy germ-life and convert the most deadly animal poisons into innocuous and harmless matter, is in marked contrast with the horrors of the old caustic system. In our treatment of gangrenous diseases let us abandon the crude, barbarous systems of the past, and discard all caustic agents which have no power to correct sepsis, or infection, but which only destroy the living tissues.

In the study and practical treatment of these affections, we find that antiseptic and disinfectant action is not all that is necessary. We may destroy the primary germ and the poisonous ptomaïne, and still not be able to restore healthy vital action in the parts, or prevent the progress of necrosis. It was this hope of restoring vital action which led the ancients to use caustics and cauteries as local stimulants. I believe that we possess active stimulants of vital action which are devoid of all caustic or destructive power, and that there are certain agents which have a specific power of this nature. The agents of this character which I have relied on most frequently, and for the greatest length of time, are a concentrated solution of the sulphate of zinc and dilute sulphuric acid after the following formula:

R.—Sulphate of zinc . . .	1 ounce.
Dilute sulphuric acid . .	4 drachms.
Water	1 pint.—M.

This mixture is one of the most potent stimulants of vital action in gangrenous tissues, or rather in the

contiguous tissues, and is one of the most effectual means of arousing vasomotor action in the capillary vessels when vitality is impaired but not lost, of which I have any knowledge. At the same time it causes the gangrenous tissue to shrink and separate from the sound parts, often with unexpected ease and rapidity. I have experimented with this combination in a large number of cases of sloughing wounds and tissues, some limited, others extensive, in the past thirty-two years, with favorable results in the great majority of cases. During the late war I found it invaluable. In gangrenous or sloughing wounds, in which the process of mortification is rapidly progressing, with utter loss of sensibility and entire vasomotor paresis, and with the tissues breaking down extensively, without any tendency to establish a line of separation, it has often given me excellent results. It is exceedingly cleanly, and when acting favorably changes the offensive, fœtid, filthy parts rapidly and effectually. The action in many cases in hastening and facilitating the separation of the sloughs has been most satisfactory, leaving in the place of the sloughs a healthy basis for granulation. Under this influence I have known large areas of sloughing matter to be thrown off in forty-eight hours, and a healthy base to be established. I have usually applied the solution every three hours by means of cotton-wool. If the sloughs are dense and impenetrable the solution is also injected into them. When healthy tissue is found after the separation of the sloughs, the further application of this solution is no longer admissible, as its contact with the parts gives rise to intense pain. I know of no local stimulant that acts more promptly than this in developing renewed sensibility and vital action in tissues which are on the verge of gangrene and breaking down from necrosis. In small sloughing wounds I have found its action exceedingly prompt in removing the sloughs and leaving a healthy surface for granulation.

Another disinfectant, antiseptic, and potent stimulant of vital action in gangrenous diseases is bromine in solution. I usually employ as a local application two drachms of bromine in one pint of water. In this strength it may be freely applied to sloughing parts, and when the slough is impenetrable, injected into the gangrenous tissue. In certain cases in which gangrene was arrested by the use of bromine and in which cicatrization was completed after the suspension of the remedy, inflammation with a tendency to sloughing again commenced. A return to the bromine treatment invariably corrected the infection, arrested the inflammation, and changed the vital action in the parts with the result that healing again took place.

I cannot but regard a remedy combining these varied qualities as of infinite value. I repeat the assertion that of all local agents which aid in stimulating vital action in gangrenous structures, and in hastening the separation of the dead from the living tissues, the solution of bromine, dilute sulphuric acid, and concentrated solution of sulphate of zinc, in my experience, surpass all others. I desire to dwell especially upon the antiseptic and disinfectant properties of bromine, not simply as regards its local action, but also its power, when liberally applied, to prevent that form of septicæmia which arises from sloughing affections or wounds. If future experience should confirm this view, we have made, in the past few years, a great advance in the treatment of gangrene and its consequences. During the recent war I saw cases of septicæmia or pyæmia arising from wounds not more than two inches in diameter. I then treated all cases of this character under my charge by the local application of the concentrated solution of sulphate of zinc and dilute sulphuric acid, and with a fair degree of success. But the alternate application of these preparations and the solution of bromine as local means, leaves nothing to be desired.

I here wish to allude to my experience with the local use of hot water, both as a preventive and curative agent in the treatment of gangrene. In wounds with a feeble circulation, low vitality, and disinclination to heal, or with a tendency to gangrene, and in those which are actually gangrenous, there are few agents that act more efficiently as vasomotor stimulants to the injured parts than hot boiled water frequently and copiously applied. There is some art in the use of so simple a thing as hot water. More than forty years ago, in the practice of my old preceptor, the late distinguished Dr. Benjamin W. Dudley, of Lexington, Ky., I witnessed the method of treating all classes of wounds almost exclusively by hot water, and with the most excellent results. His method was the application of hot water that had been boiled and reduced to a temperature of from 110° to 120°. If the healing process was sluggish, or if there was a tendency to slough, the water was applied for from twenty to thirty minutes every one or two hours. The circulation and vital action in the parts rarely failed to improve under this treatment. An interesting illustration in his practice of the effects of applications of water at a temperature of 105° as a preventive of sloughing, was in his treatment of violent purulent ophthalmia. The water, in such cases, was poured on the eye and between the lids from the small spout of a one-pint tin vessel, for from ten to fifteen minutes every one or two hours; and among a number of cases which I saw treated in this manner there was not a single case of sloughing of the cornea. For more than fifty years Dr. Dudley treated all wounds, except those healing by first

intention, with hot water applications, and for more than forty years I have carried out these principles in my surgical practice with good results. Dr. Dudley attached great importance to boiling the water and reducing it to the proper temperature. He had a clear and well-defined idea that to be fitted for this purpose, all animal and vegetable matter should be destroyed by boiling. This is simply what is now termed "sterilized water" and which is universally sanctioned by the profession. He had a conviction that hot-water applications always promoted the healthy condition and healing of wounds, and at the same time prevented ill consequences, such as gangrene. Hence, in his practice, he never used cold water as an application.

I cannot permit this opportunity to pass without paying an humble tribute to the genius and ability of this, one of the greatest surgeons America ever produced. During the war I found hot-water dressings as a means of promoting reaction, as a preventive of gangrenous tendencies, and for improving the condition of unhealthy wounds, invaluable. I could procure hot water when nothing else could be obtained. A camp-fire, a camp-kettle, a tin-cup, and water, gave me a perfect sterilized dressing that was ample to keep wounds clean and healthy.

General treatment.—Can general treatment in any manner aid in arresting the process of gangrene and repairing its ravages? I feel sure that its capabilities in this direction are very considerable. To supply healthy blood in place of that which has been impaired, and to sustain vasomotor action and cardiac force, and, consequently, the general circulation, are the chief objects of general treatment. We have no internal antidote to pyæmia or septicæmia. All antiseptics for this purpose must be of a local character. Iron, quinine, and strychnine are our most important drugs for general treatment. I give the iron in the form of the tincture of the chloride in these cases, in doses of from thirty to forty drops every three hours. It acts as a permanent stimulant to the vasomotor system, improves the nutrient qualities of the blood, and aids in preventing the tendency to collapse. In cases of gangrene or sloughing wounds, in which the exuded blood consisted mostly of reddish serum, I have seen the blood under the use of iron become so rich in red corpuscles, albumin, and fibrin, that a few drops from a granulation would form a firm coagulum. This, to me, is a certain indication that sloughing is about to cease.

In those cases in which the circulation is feeble, the arterial tension low, and the vasomotor action nearly paralyzed, with a tendency to reduction of temperature in the wounded parts, I know of no general agent which gives impetus and force to the circulatory and heat-producing powers so promptly as nitroglycerin in doses of from $\frac{1}{50}$ to $\frac{1}{100}$th of a grain every three hours. In cases of thrombosis of a main artery, when we desire to establish a collateral circulation promptly, I believe that nitroglycerin, strychnine, iron, and strophanthus, are the most effectual means that we possess. In cases arising from embolism with septicæmia, I have found carbonate of ammonium to be valuable in connection with the remedies mentioned. In gangrenous affections, and particularly in extensive gangrene, the tendency to vasomotor paresis and general collapse is very great, and the remedies mentioned have often enabled me to tide over the emergency.

Alcoholic stimulants are indispensable in these cases, but to be of service they must be administered in large quantities. In cases of threatened or actual collapse from gangrene, I have found the system exceedingly insensible to the action of alcohol, and, consequently, capable of receiving large quantities before actual beneficial results are manifested. On one occasion, in a case of gangrene following a gunshot wound, the patient took one quart of whiskey daily, in the forms of milk-punch, egg-nogg, and pure whiskey or punch, before reaction was established. In such cases a good digestion and an abundance of concentrated nutriment are necessary to tide the case over the emergency. During the late war I saw a bad case of gangrene recover on little more than an abundance of whiskey and nourishment and hot-water applications. The patient had a good appetite and took with avidity all that he could get. Inability of the stomach to retain and digest sufficient nutriment to repair the blood depreciation, and maintain vasomotor action, is a great difficulty in the treatment of the septicæmia of gangrene. In this condition life largely depends on a vigorous stomach, plenty of nourishment, and the preservation of the system in an aseptic condition.

To illustrate more clearly the views presented in this paper, I will give in detail the history of certain cases of gangrenous wounds and diseases which have come under my observation at different times.

Case I. *Gangrene of the external genitals in a woman.*—Thirty-two years ago, previously to our advanced knowledge of the antiseptic treatment of disease, I was called to a puerperal case which some days before had been delivered by a midwife. The patient was in indigent circumstances. On entering the sick-room there was an odor pervading the entire apartment so overwhelmingly offensive and fœtid as to create intense nausea and disgust. On examination, after the parts were deodorized with chlorinated soda, I found the entire external genitals enormously swollen, black, and insensible, and from them flowed an intensely offensive ichorous

discharge. The patient was suffering from septic fever, and was greatly prostrated. Although in this case there was extensive gangrene of the genitals, a sanious discharge, and genuine septic fever, there were no indications of true puerperal septicæmia. And yet the atmosphere surrounding this patient had been for days saturated with intensely offensive effluvia. But after the sloughing tissue was removed, a healthy base established, and free suppuration begun, all the symptoms of septicæmia promptly vanished, the breasts began to secrete, and the system returned to its normal condition.

In reference to the treatment of this case, it was found that the disinfectants then in use exerted no effect on the progress of the case more than to modify the sickening odors. The object was to adopt some agent that had the power not only to deodorize, but to disinfect and corrugate or shrink up the sloughing tissue, stimulate healthy action in the parts, and effect separation.

Previously to seeing this case I had had some limited experience with the use of a concentrated solution of sulphate of zinc and dilute sulphuric acid in the treatment of sloughing affections, and determined to use the present opportunity for experimentation with that remedy. A solution containing sulphate of zinc one ounce, water one pint, and dilute sulphuric acid one-half ounce, was freely applied, by means of cotton-wool and a syringe to the gangrenous parts. At intervals of three hours applications of water at a temperature of 120° were made. In thirty-six hours the results were surprising. The enormously-swollen gangrenous genitals, including the labia and nymphæ, from the pubes to the perineum, had sloughed off, leaving a perfectly clean surface, florid, and exquisitely tender to the touch, and all disagreeable odors had disappeared. So soon as this healthy tissue-base had been reached the solution caused intolerable pain, and had to be discontinued. This case recovered without further difficulty.

CASE II. *Gangrenous carbuncle.*—A German saloon-keeper, fifty-eight years old, a habitual beer-drinker, whose general health had been impaired by his habits, was attacked by a carbuncle on the back of the neck, extending from the scalp down to the sixth cervical vertebra. The carbuncle soon assumed enormous proportions, and the entire mass of tissue from the cutaneous surface to the spinous processes of the vertebræ became gangrenous. After a crucial incision much of this gangrenous tissue was removed. The cavity was then freely bathed with oil of turpentine. But it was not until applications of the solution of zinc and sulphuric acid were made that indications of a return of vital action in the parts appeared. Under continuous applications of the solution separation of the sloughing tissues progressed favorably, granulations began to appear, all offensive odors ceased, and abundant suppuration took the place of the offensive ichorous discharge. This patient's general condition was exceedingly unfavorable. His vital powers were greatly depressed, and the prostration was serious; his pulse was frequent, the extremities cold, his complexion sallow, and his appetite was entirely lost. There were evening exacerbations of fever and copious night-sweats. The patient took as freely as possible alcoholic stimulants in the form of egg-nogg and milk-punch; rich broth; the tincture of the chloride of iron in full doses; one one-hundredth grain of strychnine; the same quantity of nitroglycerin; and two grains of quinine every three hours. At night he took one-sixtieth of a grain of atropine for the night-sweats. In a reasonable length of time I had the satisfaction of witnessing a reaction in the general condition of this patient, the reëstablishment of healthy action in the wound, and the formation of a healthy base for the growth of granulations to fill the vast cavity left by the loss of tissue.

CASE III. *Hospital gangrene of the foot.*—The patient was a soldier who had received, in one of the battles near Richmond, a gunshot wound of the foot, producing a compound comminuted fracture of the metatarsal bones. The wound had been treated principally by means of cold-water applications. When brought into my field hospital near Drury's Bluff, the foot presented a dark, brownish-red color, with great œdema, accompanied with intense burning pain and symptoms of septicæmia. The wounded parts were thoroughly cleansed with soap and water, and dressed with hot-water applications. In twenty-four hours genuine hospital gangrene had developed, his pulse became frequent, his temperature rose, his tongue became dry, his appetite was lost, and his mental condition apathetic. (In almost every instance of hospital gangrene coming under my observation, mental apathy, together with an ichorous discharge from the wound, preceded the development of the disease.) The gangrenous process was extending to the ankle, and the general condition was rapidly becoming worse. The hot-water applications were repeated every two hours, and a solution, containing sulphate of zinc two and one-half ounces, dilute sulphuric acid one-half ounce in one pint of water, was applied. The entire foot was enveloped with raw cotton, which was saturated every three hours. Tincture of the chloride of iron in thirty-drop doses, strychnine one one-hundredth of a grain, and quinine two grains, were given every three hours, with the most nutritious diet that could be procured. In about two days the gangrenous parts presented a rather improved appearance. The process had not extended, the surrounding tissues had a better circulation, and there were less inflammation and swelling, and less pain. From that time to the cessation of the gangrene and the commencement of healing the improvement was progressive. The line of separation was established, the sloughs were thrown off, and a healthy basis was established. As soon as the sloughs separated and the healthy surface was exposed, the applications caused intolerable pain and had to be discontinued and a simple dressing substituted. But previously to this separation, while the sound tissue

was protected by the sloughs, the solution caused no pain whatever.

CASE IV. *Hospital gangrene following a wound of the thigh.*—Lieutenant B., a young Confederate officer in the Army of Northern Virginia, received a grape-shot wound, which extensively lacerated the tissues of the thigh, at the battle of Frazier Farm, 1862. The weather was intensely hot, the atmosphere malarial, and the army had been subjected to six days of hard fighting and marching. When the officer was admitted into my field hospital gangrene had set in at the points of entrance and exit of the ball. The skin around the wound was swollen, of a brownish-red color, and exuding a peculiar ichorous discharge. Very soon the surface of the wound became ashy gray and pultaceous. Already septic or pyæmic fever, initiated with a chill, had commenced. There were complete anorexia, mental apathy, and indifference. The patient was isolated under a tent-fly, and in the shade of a tree apart from the camp, and the fresh air permitted to sweep freely over him. The wounded parts were enveloped in raw cotton saturated with the zinc and sulphuric acid solution, and hot water was applied every two hours. He took iron, quinine, and strychnine, and as there was extreme depression, carbonate of ammonium was given at intervals. His diet was nutritious, with alcoholic stimulants in abundance. Under this system of treatment the gangrenous process was arrested in a reasonable time, and the sloughs, which were extensive, became shrivelled and corrugated, and fell off, leaving a healthy surface, while the general system rapidly responded to the improved condition of the wound. Then the zinc dressing, as usual, gave rise to acute pain and was discontinued. This patient recovered in due time and resumed his place in the army.

The last two cases are cited as examples of my method of treating hospital gangrene at that time. While the results of the method were favorable in the majority of cases, in a certain proportion of cases in which septicæmia was intense, with profound depression and exhaustion from army-life, all remedies, including amputation, failed. Yet in these cases, when I could improve vital action in the wound, disinfect the slough and cause the process of separation to begin, even in slight degree, the general system would promptly respond, as if the gangrene were simply a local process for the continuous generation of infective poison, and when the supply was suspended the effects immediately ceased.

CASE V. *Dry gangrene of the lower extremity.*—This, the case of M. R., a furniture-dealer, presents many interesting features. Some years ago the patient had facial paralysis, then for a time suffered from small carbuncles that sloughed to some extent. In February, 1890, the little toe of one foot became rather painfully inflamed, then the tarso-phalangeal joints became swollen, inflamed and painful, resembling rheumatic gout. After two weeks of great suffering a purple spot appeared on the dorsum of the foot, then vesication followed by dry gangrene which extended rapidly over the foot, excepting the plantar surface. The gangrenous process involved the skin, cellular tissue, muscles, and tendons down to the tarsal and metatarsal bones, and also the upper surface of the phalanges. During this protracted and painful process his general health suffered seriously. There were great mental despondency, but a keen desire to live, entire loss of appetite, sleeplessness, feeble and frequent pulse, jaundiced complexion, dry tongue, occasional rigors, evening fevers with night-sweats, and all the indications of septicæmia. At this stage of the case, at the request of the family, Surgeon-General Hamilton saw the case with me, and was so much impressed with its gravity that he regarded amputation above the knee as necessary to save life. This conclusion was reached because we could not discover a trace of pulsation in either the tibial or peroneal arteries. The inferences we drew were that thrombosis of the popliteal artery existed, and that a collateral circulation sufficient to nourish the limb could not be established. The question then arose whether the feeble circulation in the limb below the popliteal space, the pulsation of the femoral artery being perceptible above, was not already carried on by an imperfect collateral circulation. If the latter was the case the degree of circulation which returned to the limb after cessation of the gangrene, was remarkable. When recovery began the granulations were healthy and profuse, and the healing process continuous. The blood issuing from these granulations on the slightest touch was florid and coagulated rapidly, whereas before, only a dark, reddish serum escaped. Up to the present time no pulsation can be detected in the arteries of the leg.

If we were correct in the conclusion that there was occlusion of the popliteal, this case illustrates to a remarkable degree the powers of nature in establishing a collateral circulation of sufficient force to heal extensive wounds and support the entire limb. My patient was so resolutely opposed to losing his limb that I determined to resort to every resource of surgery to save it. My first procedure was to remove or dissect away with knife and scissors all loose sloughing tissue, including skin, muscles and tendons. Then the entire gangrenous surface was enveloped in absorbent cotton saturated with the zinc and sulphuric acid solution for the purpose of stimulating renewed vital action in the parts, and arousing vasomotor action and sensation. The first indication of a return of sensation in the parts was after these applications. The extensive diseased surface began to assume a more healthy appearance, but now the pain from the application on certain parts became intense, while in some directions the gangrene was extending toward the plantar region. A solution of bromine was then substituted. This solution was exceedingly soothing and at the same time it proved an active stimulant of vital action, and a potent disinfectant, and exerted a decided influence in controlling the infectious inflammation. At times the gangrene ceased, and the remedy was suspended. Localized gangrenous in-

flammation would then return, but the bromine again arrested this inflammation, and stimulated the growth of healthy granulation. I have invariably used the bromine in the strength of two drachms to twelve ounces of water.

The diseased foot was bathed in sterilized hot water every three hours, after which the bromine was applied. Over this an ointment composed of ichthyol three drachms, iodoform one drachm, carbolic acid ten drops, and cosmoline one ounce, was applied. The patient steadily improved under this method of treatment, but became dissatisfied with the offensive odor of the ointment, when the following was substituted: aristol one drachm, vaseline six drachms, lanolin two drachms. This acted well throughout the subsequent course of the case.

I desire to dwell at some length on the value of the agents used in this case not only in arresting the extension of gangrene, but in controlling that type of septic or infectious inflammation which usually precedes the death of the tissues. Hospital gangrene and the gangrene of erysipelas are well known to be infectious diseases, and infection is generated by the peculiar inflammation. The action of bromine in controlling hospital gangrene is manifestly due to its wonderfully energetic disinfectant powers.

In regard to the general treatment of this case of dry gangrene, every means was used for the purpose of improving and promoting blood-formation and nutrition with a view to counteracting the depressing effect of septicæmia. The patient took the most nutritious and concentrated food with an abundance of stimulants, and the traditional triple compound, iron, quinine and strychnine, in connection with one one-hundredth of a drop of nitroglycerin every three hours. Beginning with a feeble cardiac action, low arterial tension, cool extremities, lividity of complexion and feeble circulation in the diseased limb, the action of the heart gained force under the influence of these agents, the arterial tension greatly increased, the complexion improved, and the circulation about the diseased tissues became far more active. Healthy granulations began to form and the sloughs to separate and fall off, and under the disinfectant action of the local agents the septicæmia disappeared. Thus there was a collateral circulation established of sufficient force to enable the system to arrest the gangrene, throw off the dead tissues and begin the process of healing.

As a vasomotor stimulant and a means of invigorating the action of the heart and developing the capillary circulation, I am satisfied that nitroglycerin played a conspicuous part. The periosteum of the upper surface of the metatarsus of a portion of the tarsus, and of all the bones of the toes and their joints, were bared by the sloughing. Notwithstanding this, the profuse and rapidly-growing granulations finally covered most of these exposed bones. The chief difficulty occurred in the articulations, most of which became necrosed. The necrosis at different points was treated by applications of officinal dilute muriatic acid. I have found this, after experimenting with various agents, the most certain and effectual application to cause disintegration of the necrosed bone. Under its action the dissolution and disintegration of the phosphates and carbonates of lime of the necrosed bone progress with surprising rapidity. Necrosed bone contains but little animal matter, hence the acid has a fair opportunity to act. Occasionally since the recovery of the patient, small points of necrosis appear over the formerly-exposed bones through limited ulcerations in the cicatrix, and are successfully treated by means of the dilute muriatic acid.

CASE VI. *Gangrenous phagedæna of the penis.*—In this case gangrene was caused by a chancroid. When the patient came under my charge there was enormous œdema of the prepuce and glans, and the parts were black, pultaceous, and rapidly breaking down. The discharge was of an ichorous and extremely offensive character. Hot-water dressings were frequently applied, and the parts were enveloped in absorbent cotton saturated with the zinc and sulphuric-acid solution, heretofore mentioned, and renewed every three hours. The patient was given the tincture of the chloride of iron and dilute hydrochloric acid every three hours. In due time the offensive odors disappeared, the state of vital action in the parts improved, and the sloughs, under the influence of the zinc and acid applications, contracted and separated from the sound tissues. All of the prepuce, a portion of the glans and the skin on the dorsum, which was gangrenous, sloughed and left a perfectly healthy basis for granulation and the process of healing was accomplished in a reasonable period.

In this paper I have endeavored as far as practicable to describe cases representing the various forms and types of gangrenous affections, and the treatment found most efficient in each variety.

In conclusion, it may be stated, that to attain any degree of success in the local and general treatment of gangrenous wounds and diseases, it is absolutely necessary to discriminate between the various forms of the disease, also to determine the proximate cause and the general state of the patient. There are types of cases purely septic in origin in which sublimate dressings are applicable. There are other cases strictly of an infectious origin, upon which nothing acts better than bromine. Again, there are cases, whether of a traumatic or idiopathic form, in which vital action and vasomotor power are reduced to the lowest degree, and in these cases the strong solution of sulphate of zinc and dilute sulphuric acid acts well.

PRELIMINARY NOTES ON A CASE OF LUPUS VULGARIS TREATED BY INJECTIONS OF KOCH'S LYMPH.

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AND
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THIS case occurred in the practice of Dr. Lloyd four years ago. It was subsequently seen in consultation by Dr. Stelwagon, who, in view of the small size of the patch, operated by excision. A recurrence lately taking place, it was decided, after due consideration and upon the solicitation and acquiescence of the patient's parents, to treat the disease by the method brought forward by Koch. The injections were made at the boy's own home. The case is still under treatment and observation. The newness and great interest in this method justify the publication of these preliminary memoranda.

When the patient first came under our conjoint observation, two years ago, the patch of disease, situated on the left cheek near the angle of the jaw, was about the size of a small bean. It consisted of several closely contiguous characteristic lupus tubercles or deposits, with no tendency to ulceration, but with a slight disposition to exfoliation. It had then existed for at least six years, beginning when the boy was five years old. The result of the operation referred to above was apparently good, healing rapidly ensuing, and the disease exhibited no tendency to recur until nine months ago. At this time points of lupus-deposit began to show at the edges of the cicatrix, and have since progressed slowly. Two weeks ago, when Koch's treatment was begun, the whole patch was slightly elevated, and consisted of an oval-shaped scar, somewhat reddish, and with the peripheral portions studded with several small tubercles; each of these latter was covered with a minute scale.

The patient is a well-grown boy of fifteen years, a native American, well nourished and robust. No indication of tuberculous disease elsewhere in the body exists. The family history, however, is tuberculous.

Since the first injection the temperature and pulse have been recorded every two hours.

First injection, January 8th, 0.001 gramme of lymph. No systemic reaction. The patch showed but little, if any, reaction; it was possibly slightly more elevated and reddened.

Second injection, January 10th, 0.001 gramme of lymph. Slight chilly sensations four hours later, but no rise or fall of temperature. On the day following the patch was somewhat elevated, puffed, and reddened. The points of disease were not so prominent, this probably being only apparent and due to the increased elevation of the central scar-tissue. Two minute foci, not before seen, could now be detected at the edge. On January 12th the swelling and redness had somewhat diminished.

Third injection, January 13th, 1 P. M., 0.002 gramme of lymph. At 10 P. M. a severe chill, lasting a half-hour, accompanied with headache and aching of the bones, etc. The temperature rose rapidly until it reached 102.5° at 2 A. M. on the following day (January 14th). It then sank with some fluctuation to 101⅕°, rising again to 102⅖° in the afternoon. The area of disease became decidedly puffed, prominent, and red.

On the next day (January 15th) the temperature fell to 97°. The patient's general condition was good. The whole patch, including the scar-tissue, was paler. The scar was covered with scanty bran-like scales, the lupus-points were flatter and covered with a thin crusty-looking scale.

On January 16th the scaliness had become much more abundant, and directly over the lupus-deposits partook more of the nature of crusts than scales; the patch was pale pink and the puffiness completely gone. Over the trunk posteriorly a small papular, discrete and patchy, pink to red, measley-looking eruption was visible.

Fourth injection, January 16th, 12 noon, 0.002 gramme of lymph. Temperature three hours later was 97°. The rise began at 3 A. M. on the following day, reaching 101⅖° at 11 A. M., and toward evening falling to normal. The patch was now (January 17th) covered with much more copious bran-like scales, and was surrounded by an erythematous zone. The measly eruption on the back was brighter and more diffuse.

On the next day (January 18th) the temperature was more markedly subnormal than at any time during the treatment, falling to 96⅖°. At this time the pulse was 58. The patch of disease was apparently becoming less conspicuous and flatter.

Fifth injection, January 19th, 5.30 P. M., 0.002 gramme of lymph. Temperature began to rise at 4 A. M. on the next morning (January 20th) and reached at noon 103⅕°, at which time the pulse was 116, but of good force. No eruption on back. No chill. A feeling of nausea. The patch had a markedly-shrivelled and sunken appearance, with a pinkish flush surrounding it.

SUMMARY.—The patient has borne the injections well. There have been no alarming symptoms at any time. The dose has not been increased beyond 0.002 gramme, inasmuch as the reaction following each injection of this amount has been considered sufficiently intense. The sites of injection for the diameter of an inch or so become slightly reddened, the flush then gradually disappearing; at the site of the first injection the erythematous patch has remained, but in other respects nothing is to be noted.

The patch of lupus has been undoubtedly impressed, and, we think, in a decided and favorable manner; the diseased area being apparently less elevated and less conspicuous than before the injections were begun. The puffiness, prominence, and redness which followed the first three injections have been absent in the last two; in these last the result has been an increase in the exfoliation, and the appearance of an erythematous zone surrounding the patch. This zone disappears slowly during

the twenty-four hours following the injection. It is, of course, too early in the treatment to state the probable result. So far it has been sufficiently encouraging to warrant a continuance of the injections.

MEDICAL PROGRESS.

Pilocarpine in Diseases of the Ear.—Since 1880, POLITZER (*Lancet*, January 3, 1891) has employed subcutaneous injections of muriate of pilocarpine in every variety of recent and of chronic affections of the labyrinth, often with excellent results. He uses a two-per-cent. solution. At first two drops of this are injected under the skin of the arm, and the dose is increased by one drop each day until eight drops are given at an injection. Soon after the injection there is increased secretion of saliva and sweat for about forty-five minutes. If there are disagreeable effects, such as nausea, giddiness, faintness, etc., they may be overcome by the administration of a small dose of atropine. The injections should be made daily. If, after two weeks, the remedy does not produce an improvement of hearing, it must be regarded as ineffectual, and should not be continued; but if the hearing improves, the injections should be continued as long as the improvement progresses.

Dr. Politzer summarizes his opinions as follows: 1. The subcutaneous injection of pilocarpine is particularly indicated in recent affections of the labyrinth, be they syphilitic or not. 2. The injections are of little use in acute inflammation of the middle ear. 3. They are decidedly contra-indicated in cases of dry sclerotic catarrh of the middle ear. 4. Injections of several drops of a two-per-cent. solution into the tympanic cavity through a catheter are beneficial in some cases of catarrh with swelling and slight secretion. In such cases the injections should be given for from one to two weeks alternately with Politzer's method of inflation.

Ointment for Comedones.—The *Canadian Pharmaceutical Journal* quotes the following prescription, said to be used by Unna in the treatment of comedones:

℞.—Solution of hydrogen peroxide, Vaseline } of each 2 ounces.
Lanolin . . . . . 1 ounce.
Acetic acid . . . . . 1 drachm.
Mix and perfume.

Treatment of Laryngeal Spasm.—The treatment of spasm of the glottis is often difficult and uncertain in its results, but SIR MORELL MACKENZIE writes that by setting up a rival reflex the laryngeal spasm may be instantly overcome. The patient need only take a pinch of snuff or black pepper into the nostrils, or if neither can be obtained the nares should be tickled by a feather. The immediate result is a paroxysm of sneezing, after which the breathing is relieved.—*Hospital Gazette*, December 6, 1890.

The Administration of Oxygen by the Rectum and Hypodermically.—DR. FRANCESCO VALENZUELA, of Spain (*El Siglo Médico*), has published a paper on new methods of administering oxygen with especial reference to the treatment of senile pneumonia. Believing that oxygen inhaled in dyspnœa frequently fails to relieve because it does not come in contact with a sufficiently large vascular area, he began administering the gas *per rectum* and also hypodermically. In every case in which oxygen enemata were given dyspnœa was decidedly and permanently relieved. The ease and rapidity with which the gas was absorbed by the intestine were remarkable; indeed, it seemed to be as readily taken up by the intestine as by the lungs, four injections of five litres each being absorbed in an hour. Thus the intestinal mucous membrane may become a valuable adjunct to the lungs. In employing oxygen hypodermically Dr. Valenzuela believes that it is important to introduce the gas in its nascent taste. The arm was selected for the injections, and the quantity of gas introduced varied from half a litre to a litre. Cellular emphysema was, of course, produced, and a sensation of heat was complained of, but both disappeared within a few hours. There was no calmative action or slowing of the respirations, but there was marked stimulation of the heart, a desirable result in the collapse that follows pneumonia and fevers of a typhoid character, and cerebral congestion and asphyxia. No mention is made of the temperature of the gas that was administered, a point which, according to Dr. B. W. Richardson, is of great importance.—*Lancet*, January 3, 1891.

Treatment of Uterine Catarrh.—The *Revue Obstetricale et Gynécologie* (December, 1890) gives the following treatment for catarrh of the cervix uteri. After stating that it is best to have a syringe which will deliver the stream in jets, and that the injections should be repeated twice a day, the following medicated solution is valuable. These solutions may be either antiseptic or astringent. A useful antiseptic solution is to be made by taking 4½ ounces of boracic acid and dividing it into 10 powders, one of these powders is to be placed in 3 pints of boiling water; or, with equal advantage, we may employ 10 drachms of the sulphate of copper, which are to be divided into 10 powders, and one of these powders placed in 3 pints of boiling water; or, again, 2½ drachms of beta-naphthol may be added to 8 ounces of alcohol. Of this last solution, a teaspoonful is placed in a quart of boiling water; as soon as the water is cooled to a temperature of about 105° or 110°, it may be injected. In other cases, 4½ ounces of borate of soda may be divided into 10 packages, and the contents of one package be added to 3 pints of boiling water; or in its place may be employed 15 grains of nitrate of silver dissolved in 3 ounces of distilled water, of which a dessertspoonful is to be placed in 3 quarts of boiling water. In other instances from 20 to 100 drops of a solution of the perchloride of iron may be added to 3 pints of water and used instead of the solutions already named.

Prescription for Hemicrania.—In the *Journal de Médecine de Paris* the following prescription for hemicrania is given:

℞.—Antipyrine . . . . 3 grains.
Antifebrin, Powdered rhubarb } of each 1 grain.
Powdered calamus . . . ½ "
Powdered quinine . . . 1 "

This is to be made into 1 powder and repeated three or four times a day if necessary.

CURRENT LITERATURE.

SATURDAY, JANUARY 24, 1891.

DIAGNOSIS AND TREATMENT OF TUBAL PREGNANGY IN THE EARLY STAGE.

SMOLSKY calls attention to the fact that the teaching on ectopic gestation has undergone some changes during recent years. He claims that extra-uterine pregnancy occurs more frequently than was formerly supposed. According to M. Veit, nearly 28 per cent. of all cases of retro-uterine hæmatocele are due to tubal pregnancy with rupture of the sac. He recognizes the existence of ovarian and ovario-tubal gestations, but expresses doubt upon the possibility of peritoneal pregnancy. The tubal form is the gravest and the most frequent. Its gravity consists in a very considerable percentage of mortality, and in the possibility of sudden death. In the early months of tubal gestation the diagnosis is very difficult and often impossible, since most of the patients die during this period from a rupture of the embryonal sac with profuse hæmorrhage. He believes that more importance should be accorded to the form of the uterus than is usually done by writers upon the subject; of all the works he has examined Ernst Fränkel alone makes mention of this. As regards the size of the fœtal sac in tubal gestation, Smolsky has found that during the second month it attains the size of a pigeon's-egg; at two months it is as large as a walnut; at two and a half months as large as a hen's-egg; at three months it reaches the size of a fist, and at four months two fists. The signs of pregnancy, the metrorrhagia, the atypical pains, the insufficient development of the uterus with a parallel enlargement of a tumor on either side, the form of the womb, which is flattened in the antero-posterior diameter, the ineffectual contraction of the uterus without dilatation of the uterine canal, the consistency of the tumor, and the vascular bruit, are the diagnostic signs of this condition. The spontaneous discharge of the decidua he regards as of very important, but not decisive signification.

He draws the following conclusions from the information he has been able to gather from the literature on the subject:

1. The precise diagnosis of tubal gestation can be established by clinical examination. A sure way consists in careful and repeated explorations with comparison of their results.

2. In the present state of our knowledge, in most of the cases an absolute diagnosis is scarcely possible before the third month.

3. It is unnecessary and dangerous to use exploratory instruments, such as the sound and curette, in the uterine cavity to diagnose tubal pregnancy in its initial stages.

4. With a suspicion of tubal gestation and the appearance of a tumor on the side of the womb, in cases difficult of diagnosis, an exploratory laparotomy is admissible.

5. In case of the positive diagnosis of tubal gestation before the rupture of the sac, the best treatment is extraction of the sac by laparotomy.

6. In case of rupture laparotomy must be considered as obligatory, if the state of the patient gives rise to anxiety.

7. In case of completed tubal pregnancy it is necessary to take into consideration the life of the fœtus in fixing the time of operation.—*Archives d'Obstetrique et de Gynecologique*, December 25, 1890.

INTRA-UTERINE TAMPONMENT.

IN a communication read before the International Congress at Berlin, in August last, DR. AUVARD, of Paris, endorses Dührsen's method of tamponing the cavity of the uterus for the arrest of hæmorrhage arising from uterine atony. He claims that it is attended with but slight danger, and that its efficacy is generally recognized by the accoucheurs who have employed it. It should, however, not be employed until intra-uterine injections of hot water and subcutaneous injections of ergot have proved inefficient. The method of procedure is as follows:

The woman being placed across the bed (a vaginal douche having been previously given), with the aid of volsella forceps the anterior lip of the cervix is seized and brought down to the orifice of the vulva, whilst at the same time an assistant presses upon the fundus of the uterus to favor its descent. The cervix is then inspected to be certain that it is not the source of an arterial hæmorrhage, in which case a ligature should be placed around the bleeding vessel. The cervix being held at the vulva, the uterine cavity is abundantly flooded to favor the escape of the clots which it contains, and which should be, in difficult cases, removed with the fingers; this manœuvre is easy if care is taken to press simultaneously upon the fundus of the uterus. When the uterine cavity is free, the operator carries into it, by the aid of forceps or the fingers, the end of a strip of iodoform- or simple gauze (the latter should be previously soaked in boiling water for some minutes, or in a sublimate solution of 1 to 1000, and then carefully squeezed dry). The forceps, or fingers, are then withdrawn and a new portion of the gauze inserted, and this is repeated until the cavity of the uterus is filled. Before detaching the volsella forceps, the cervical canal should also be filled. Then, the cervix being freed, as much gauze as possible is introduced into the vagina; in a word, not only an intra-uterine tamponment is made, but also an utero-vaginal tamponment, which is surer. This tampon should be left in place twelve hours, a sufficient time for the hæmorrhage to cease.

Should the hæmorrhage be very grave, the procedure is somewhat different. The hand should at once be introduced into the uterus, the woman having been placed in the obstetrical position. Then, abandoning the fundus of the uterus to the care of an assistant, after having emptied the cavity of the uterus of its contents, the free end of the strip of gauze is passed up into the cavity by the aid of forceps, or by the fingers of the left hand, and

grasped by the fingers of the hand already within the cavity of the uterus, and carried to the fundus; successive portions are thus introduced until the cavity is filled, when the utero-vaginal tamponment is performed as already stated. If properly done this method of arresting uterine hæmorrhage is very efficient, and, with ordinary care, is not attended with any bad results.—*Archives de Tocologie*, Dec. 1890.

LOSS OF CONSCIOUSNESS IN EPILEPSY.

Brown-Séquard asserts that in epilepsy, as in natural sleep, it is beyond doubt that cerebral anæmia is not the cause of the loss of consciousness, but that it is extremely probable that the cessation of the activity of the brain in sleep, either hypnotic or normal, in *petit mal*, in a well-developed epileptic convulsion, in certain cases of syncope, in asphyxia, and in poisoning, depends upon an inhibitory action upon the base of the encephalon and cervical marrow, without the quantity of blood being diminished in the brain. He has demonstrated this inhibitory action by several experiments upon dogs and other mammals, the mere section of the skin of the neck, which it is necessary to make in order to expose the great sympathetic and its ganglia, being followed by an inhibition of the epileptogenous power of the brain, whilst ablation of the two superior cervical ganglia is followed by the same inhibitory action, the quantity of blood in the brain remaining normal.—*Archives de Physiologie*, January, 1891.

ACTION OF CERTAIN REAGENTS UPON THE CEREBRAL CIRCULATION.

De Boeck and Verhoogen have published some observations upon their studies of the modifications in the cerebral circulation which take place under the influence of certain reagents. Their investigations included the effects produced by carbonic-acid poisoning, and those arising from subcutaneous injections of ether or intravenous injections of morphine, with special reference to their influence upon the general blood-pressure, the force of the cerebral circulation, as shown by the quantity of blood traversing the brain in a given time, and the effect upon the cortex and basal ganglia. These experiments were performed for the most part upon curarized dogs, and consisted in the introduction of a canula, armed with a glass tube, into the external jugular vein after ligation of all the veins emptying into it with the exception of the inferior cerebral, thus securing the escape of all the blood through this channel. By the aid of the kymographion they were enabled to estimate the force and rapidity of the cerebral circulation, and to note any changes arising from the introduction of the poison into the system. The general blood-pressure was taken in the right crural artery. By means of ophthalmoscopic examinations these observers were enabled to note the effects of the substances upon the basal circulation, while the thermo-electric needle recorded any alteration in the cortical temperature as indicative of changes in the circulation there.

A condition of *asphyxia* was produced either by arresting the artificial respiration in the curarized dog, or by compressing the trachea when the animal was breathing naturally. The circulation under these circumstances became more active in every part of the brain, and this augmentation was independent of the changes in the general blood-pressure. An active cerebral congestion was produced, as shown by the ophthalmoscope and thermo-electric needles.

It was found that sulphuric ether injected under the skin of the breast or abdomen slightly raised the general arterial-pressure, and at the same time produced an increase in the flow from the cerebral vessels.

From the experiments upon the action of morphine, it was found that the hydrochlorate administered intravenously weakened the cardiac contractions and dilated the capillaries, but did not alter the cerebral flow. After a single injection the arterial-pressure remained normal during a period of time varying from a few seconds to a half-minute. It then fell abruptly, remaining low for a period of variable duration, and then slowly returned to its normal level. The effects of successive injections became less and less marked, until scarcely any appreciable fall was noticed. Sooner or later, however, according to the susceptibility of the animal, sudden irregularities occurred in the kymographic curve, succeeding one another quickly, or separated by regular tracings. Upon the cerebral circulation the effect was very interesting. The cortex became anæmic, while the base became relatively hyperæmic.

Practically these experiments with morphine are suggestive. From the depressing effect of the drug upon the heart and circulatory system, it is evident that its subcutaneous use is contra-indicated in lesion of the heart and vessels, in atheroma, and in cardiac asthenia. The effects are entirely opposite to those produced by digitalis. Morphine is, therefore, of service where digitalis fails, preëminently in great hypertrophy of the left ventricle, in which it weakens the cardiac contractions, dilates the vessels, and regulates the circulation.

The authors append the following *résumé* of their work:

1. In an artery which divides into two systems or branches, if the capacity of the branches is not approximately proportionate to that of the common trunk, every variation in the resistance to the passage of the blood in one of these networks determines the variations in the flow of the other.

2. This reciprocal dependence of the capillary circuits fed by the same artery is much more marked if the distance between the collateral and terminal networks is great. This rule holds with great force in regard to the cerebral circulation.

3 In poisoning by carbonic acid the blood-pressure rapidly rises, the cerebral flow becomes more abundant, and the circulation of the base and of the cortex becomes more active.

(*a*) Following subcutaneous injections of ether

the blood-pressure slightly rises; the cerebral flow increases little by little; and the blood-supply is more abundant to every part of the organ; but these phenomena are slighter and less evident than those produced by asphyxia.

(*b*) Intravenous injections of morphine lower the blood-pressure; the cerebral flow does not undergo modification, but there is anæmia of the cortex with hyperæmia of the base.—*Journal de Médecine*, November 5, 1890.

SOCIETY PROCEEDINGS.

PHILADELPHIA ACADEMY OF SURGERY.

Stated Meeting, December 4, 1890.

J. EWING MEARS, M.D., IN THE CHAIR.

(Concluded from page 83.)

DR. JOHN B. DEAVER read a paper entitled

OPERATIVE TREATMENT OF STRICTURE OF THE MALE URETHRA.

His objects, he said, in reading a paper upon this subject were, first, to present the treatment that he has found most satisfactory and which he believes offers the only means of cure in the great majority of cases as he has demonstrated most satisfactorily to himself; second, to detail some of the consequent conditions, especially those following strictures of large calibre; and third, to provoke discussion, and thus to hear the experience of others.

To make the subject as concise as possible he classified strictures under the following heads: 1st. Strictures of large calibre. 2d. Strictures of small calibre. 3d. Impermeable strictures.

Any of these forms might be the result of disease, which is more common, or of traumatic origin, which is less common. The larger number of the former, in the speaker's experience, are in the pendulous or spongy urethra, from two and one-half to three and one-quarter inches within the meatus; traumatic strictures being almost always of the membranous urethra.

If the stricture is twenty millimetres or more in circumference the diagnosis is best and most accurately made by the urethrometer and urethroscope, and if less than twenty millimetres in circumference with the *bougie à boule* and the urethroscope.

Strictures of large calibre and contractions of the meatus show their ill effects chiefly by reflex troubles of the urinary and sexual apparatus, and cause, first, the simplest of these troubles, namely, retention of a few drops of urine in the urethra after urinating, due to spasmodic contraction of the muscular layer of the urethral wall; second, painful and prolonged erections immediately preceding or following urination; third, a contracted and somewhat hardened condition of the penis due to spasmodic contraction of the muscular fibres embedded in the trabeculæ of the corpora cavernosa; fourth, retention of urine due to spasmodic contraction of the compressor or constrictor urethra muscle—spasmodic stricture (termed urethrismus by Otis) in which in some cases it is not only difficult but may be impossible to introduce an instrument into the bladder, even when the patient is under the influence of an anæsthetic; fifth, cystospasm, and at times associated with it, rectospasm; sixth, chronic urethritis, which can be determined only by a urethroscopic examination; seventh, reflex sensory neuroses, which in too many instances make the patient's life a most miserable one, and to the existence of which every experienced neurologist can bear witness.

Many a patient suffering from a reflex sensory neurosis, caused by a stricture of large calibre or a contracted meatus, describes a train of symptoms which the surgeon, whose advice he seeks, stamps as hypochondriacal, confirmed dyspepsia, neurasthenia, etc., and dismisses as incurable. When such a case passes into the hands of another surgeon, and the cause of the trouble is detected and corrected, the latter gentleman is said, by those who are sceptical upon the subject of reflex neuroses produced in the above-mentioned manner, to have cured the patient by the moral effects of the operative procedure.

Dr. Deaver then read a letter from a former patient of his, a physician in the far West, who came to Philadelphia and placed himself under the care of two prominent surgeons, both of whom are members of the Academy of Surgery. Both surgeons finally told the patient that he was free from any organic trouble, and that it was only necessary for him to exercise the proper amount of will-power, when things would right themselves. The man, before leaving Philadelphia, consulted the speaker, who learned that in early life he had been addicted to the practice of masturbation. He examined the urethra with the urethrometer, and found both a contracted meatus and a stricture of large calibre. He operated, and ten days later the patient went home.

Symptoms of obstruction occasioned by a stricture of large calibre or by a contracted meatus are rarely so pronounced as to induce the patient to seek advice.

The disturbance of the sexual apparatus, brought about by a stricture of large calibre or by a contracted meatus, manifests itself chiefly by impotence, and particularly by the variety known as impotence due to weakness with abdominal irritability. These symptoms are explained by the stricture or contracted meatus exciting reflex irritation of the prostatic urethra; this portion of the urethra being surrounded by the prostate gland, in the superficial as well as the cortical layers of which are extensive nerve plexuses interspersed with ganglia to which belong, among other functions, that of reflexly exciting erections.

The conditions ascribable to strictures of small calibre, and to impermeable strictures, are so familiar that the speaker did not detail them, but simply said that obstruction and its results are what interfere with the entire urinary apparatus of these subjects.

It is the speaker's practice, in dealing with strictures of large calibre, to restore at once the urethral calibre by dilating internal urethrotomy. A contracted meatus is divided with the meatotome. The urethrotome which he uses is that of Otis, with his own modification of the blade. This instrument is as superior to all other urethrotomes as the urethrometer is superior to the bulbous bougie.

The different forms of treatment made use of in stricture include gradual dilatation, continuous dilatation,

rapid dilatation or divulsion, internal urethrotomy, external urethrotomy, and perineal section.

In a paper upon the same subject, published in the *Therapeutic Gazette*, October 15, 1890, the speaker recorded his objections to treatment by gradual, continuous, and rapid dilatation, to divulsion, and to internal urethrotomy with the Civiale urethrotome. Passing the bougie into the bladder, and necessarily over the prostate, when practising dilatation for stricture, the most common seat of which is the pendulous or spongy urethra, is the usual practice, and, he believed, should be most strongly condemned. In cases that he is compelled to treat by gradual dilatation he simply introduces the instrument beyond the stricture, and never further than the bulbo-membranous junction, except in cases of stricture of the membranous urethra, which are very rare. He uses for this purpose a conical steel sound, shorter and less curved than the ordinary sound.

The only proper operations to obtain a radical cure of stricture of the male urethra are, in the speaker's judgment, gradual dilatation, practised only as a preliminary procedure to dilating internal urethrotomy; dilating internal urethrotomy; internal urethrotomy with the Maisonneuve instrument, and external urethrotomy or perineal section. By external urethrotomy he meant an opening made into the urethra from without and anterior to the perineo-scrotal junction, and by perineal section he meant opening the urethra from without but posterior to the same junction.

He wished it clearly understood that he restricts the operation of internal urethrotomy, done either with the dilating urethrotome or with the Maisonneuve instrument, to strictures not further back than four and one-half inches in a penis of medium length, and five inches in a very long penis.

He highly approves of using either a general or local anæsthetic in internal urethrotomies, and gives decided preference to the former, as, other things being equal, he believes that our work is done better when we have the complete control of the patient; and again, we are not as likely to hurry with the operation as we are when using a local anæsthetic, which may entirely anæsthetize the parts, but does not abolish the patient's apprehension, as a result of which he becomes nervous and anxious, soliciting the surgeon to stop before all traces of obstruction are entirely relieved.

The question of urethral antisepsis is very important in connection with the subject of internal urethrotomy. This consists of the administration of boric acid internally for three or four days before operating, and of flushing the urethra for the same length of time from four to six times daily with a 1-to-10,000 or 1-to-15,000 solution of bichloride of mercury. The speaker believes that it is of special importance to introduce an aseptic soft-rubber catheter into the bladder immediately after the operation and to retain it for twenty-four hours. If there is any doubt that the urine is aseptic, it is well to wash out the bladder through the retained catheter with the 1-to-15,000 solution, or, if the operator prefers, with boric acid solution. The strict observance of the foregoing treatment, in addition to thoroughly clean instruments, renders this operation positively free from risks, granting that the operator is familiar with and recognizes any of the contra-indications to the operation.

In strictures of small calibre not deeper than four and one-half inches in a medium-size penis, and five inches in an unusually large penis, he cuts to 20 millimetres with the Maisonneuve instrument, completing the restoration to the normal calibre with the dilating urethrotome.

Strictures of small calibre deeper than five inches he cuts from without, doing either an external urethrotomy or a perineal section, depending upon the location of their stricture.

Impermeable strictures call for either external urethrotomy or perineal section, depending upon their location. Impermeable strictures, when multiple, and also a very long linear stricture, may require both external urethrotomy or perineal section and internal urethrotomy. In some cases it is impossible to pass the filiform bougie of the Maisonneuve urethrotome through the stricture by the way of the meatus after having done an external urethrotomy or perineal section, and in order to complete the operation it is necessary either to prolong the external wound until all of the strictured area is divided, or do an internal urethrotomy. In such cases he has succeeded in passing a very fine-eyed probe through the stricture from behind forward, introducing it by the way of the wound. He has then tied to the probe small knives like those of the Maisonneuve instrument, drawing them after the probe through the urethra and out from the meatus, in this manner cutting the stricture or strictures to 20 millimetres. It then only remains to complete the division with the dilating urethrotome.

Both external urethrotomy and perineal section the speaker performs without a guide, placing more reliance on the recognition of the tissues than upon any mechanical assistance. Some surgeons speak of doing the operation in the above manner as plodding one's way into the urethra. This is certainly a just criticism when applied to a surgeon who is not a surgical anatomist. But even where the perineum is greatly infiltrated he has not experienced any difficulty, as the exposure of the healthy urethra immediately anterior or posterior to the obstruction is the most reliable guide to the diseased portion. Having completed the operation, he not only introduces a drain into the bladder through the wound but also through the urethra, by which means he is able to irrigate the bladder and the urethra separately.

Suprapubic drainage as a preliminary to perineal section or external urethrotomy, in certain cases of stricture of small calibre and of impermeable strictures, may be required owing to the presence of complications rendering immediate perineal section or external urethrotomy inadvisable.

In discussion, DR. MORTON said that after listening to the paper and having before him a great array of instruments, said to be absolutely necessary in the successful treatment of urethral stricture, it would seem either that he was behind the times, or that he has not had under treatment those forms of stricture to which the attention of the Fellows had been called. In his long experience in private and hospital practice, he had never seen a case of stricture which required internal urethrotomy; consequently he has never performed the operation, and yet he is satisfied that his patients have been cured. He recognizes but two forms of stricture, the permeable and the impermeable; the former he can generally dilate,

in the latter he always makes a perineal section. In dilating strictures he invariably uses either graduated steel bougies, or first stretches the stricture with the Wakling tubes, introducing first the smallest silver instrument, when dilatation can be readily and safely effected by the introduction of larger tubes. The subsequent treatment consists in the passage of steel bougies, with the use of which the patient is made familiar.

In those cases of permeable strictures which, although a small instrument can be passed, present great irregularity and rigid walls, he prefers perineal section to dilatation. After perineal section he introduces the short, straight silver tube in the bladder and drains through the wound for a few days, after which a catheter or a steel bougie is daily passed through the entire urethra, gradually increasing the size of the instrument.

DR. HUNT agreed with Dr. Morton, and although he had had no experience with the method suggested by Dr. Deaver, he could claim a fair measure of success. He has discharged such patients, comparatively speaking, well, having taught them to use the instrument themselves; but we all know how careless people are of such matters. He has seen strictures return after external urethrotomy, and thought that he could not give a better report of those treated by dilatation. He has frequently performed the external operation, but very rarely the internal.

DR. PORTER, while he endorsed a great deal that Dr. Deaver had said, could not go so far. He was never partial to internal urethrotomy, his preference being for gradual dilatation with bougies. He believed that we can cure these cases as completely by gradual dilatation as by internal or external urethrotomy. The secret of success is dilatation to the normal calibre of the urethra. He does not like filiform bougies, as it is impossible to tell where the bougie goes. He has seen a filiform bougie apparently pass without difficulty, but when it was withdrawn it was found to be doubled on itself. He uses in preference the finest steel bougie, the position of the handle indicating where the instrument is. He has had as difficult cases as anyone to treat, and has seen no reason to find fault with gradual dilatation. About eighteen months ago a man was brought to his office with an exceedingly tight stricture. His history was that he had only urinated in drops for more than twenty years. The speaker worked with the fine steel bougies for some time, and finally succeeded in passing a No. 2 (French). He allowed this to remain a few seconds, and then followed it by No. 3 and then by No. 5. He then introduced the smallest catheter that he had and emptied the bladder. The patient was told to go to a hotel and to bed. He returned every three or four days and had the instruments passed, and in three months was cured. If we dilate to the normal calibre of the urethra, Dr. Porter does not believe that the stricture will return. He has examined several cases, some years after the cessation of treatment, and, as a rule, there has been no relapse.

He could endorse everything that Dr. Deaver said in regard to nervous troubles from strictures of large calibre but could not agree with him in the methods of treatment. He has never done internal urethrotomy, and external urethrotomy only rarely, for he seldom fails to relieve retention of urine by passing an instrument through the urethra. If he failed to empty the bladder by a catheter, he would aspirate. The latter operation he thinks, is too much neglected. By drawing off the urine in this manner the congestion is relieved, and the probability is that in a few hours an instrument can be passed through the urethra.

DR. COLLINS said that he had practised both methods, but chiefly relies upon bougies, and, after passing the large sizes, he has had complete success. He has used Gouley's catheters and filiform bougies, and has often been successful with them. In some cases he has performed internal urethrotomy. He fully agrees with Dr. Deaver in regard to the absolute necessity of relieving strictures of large calibre, but he is not prepared to say which of the proposed operations is the best. His plan is to begin with one method, and if that fails try others, and if he then fails, to aspirate.

DR. ROBERTS thought that there were one or two points that had not been thoroughly brought out in the discussion. The patients referred to by Dr. Morton and Dr. Hunt belong to the poorer class that comes to a general hospital for relief. These patients, if they secure a fairly-good stream of urine, are delighted, but such a result would not be sufficient for a man in the higher walks of life. It seemed to him that we should take the difference between these two classes of cases into consideration. He doubted whether Dr. Morton or Dr. Hunt followed this commoner class of cases sufficiently closely to say whether the strictures return and whether the necessity for the use of the bougie for several years is not a disadvantage.

The speaker said that he sees a comparatively small number of cases of stricture, but he almost always gets good results with gradual dilatation. He finds filiform bougies very useful, and has frequently succeeded in passing a filiform instrument after failing with a solid bougie. If, in a case of retention, he succeeds in introducing a filiform bougie, he is willing to leave the case temporarily, for there will be an escape of a certain amount of urine along the bougie which will relieve the distention of the bladder.

He would like to hear from Dr. Deaver whether, after the cutting method, it is necessary to continue dilatation for a long time.

DR. J. HENRY C. SIMES thought that the discussion was a little "mixed up" in reference to the "cure" of stricture. He does not believe in the cure of stricture. It is an anatomical impossibility to restore the urethra to its normal condition after a stricture has formed. There is, however, no doubt that we relieve the case decidedly; how the relief is obtained is immaterial to the patient. He thinks that the result depends largely upon the patient; if the subject makes no complaint we must consider him relieved. Therefore we find great differences. In highly-nervous patients the speaker has sometimes been obliged to resort to something more than dilatation. He has done internal urethrotomy in some cases, but has also been compelled to continue the dilatation. He has seen strictures return after both internal urethrotomy and after dilatation; therefore, he said, we do not cure the stricture. He begins the treatment with the method which, in his experience, offers the least risk—that is, dilatation—and continues it as long as necessary. If that relieves the

symptoms, he considers the case cured for the time being; if it does not give relief, he resorts to internal urethrotomy, and follows it by dilatation.

He considers filiform bougies of great service, and does not think that a steel instrument smaller than No. 10 or No. 8 French is a safe instrument to use in the pathologically-changed urethra. No. 6 or No. 4 is almost a cutting instrument, and in a diseased urethra there is great danger of making a false passage. With a filiform bougie there is very little danger, and he has succeeded in introducing one after failing with other instruments.

DR. DEAVER, in closing, said that he could not understand how an advanced surgeon at the present day could take the ground that had been taken by some of the Fellows in this discussion. In regard to evil results from internal urethrotomy, he has operated on about fifty cases, and has not seen the slightest complication. Dr. Otis reported at one time one thousand cases of internal urethrotomy without a death, and practically without a complication. The only complication that the speaker has seen is curvature of the penis from inflammatory deposit, which was entirely relieved by the absorption of the deposit.

He considers such instruments as Wakling's tubes relics of barbaric surgery. The instruments may split and bruise the urethra, causing much more serious damage than does the small incision made by the urethrotome. If surgeons would make urethroscopic examinations after dilatation they would find that it leaves conditions which could not be produced by the urethrotome. In one case, which he demonstrated to the class at the Philadelphia Hospital, the dilatation left a polypoid mass at the seat of stricture.

In order to be sure that a case is cured the urethra should be measured some time later. He then asked how many of the gentlemen had done this, to which Dr. Porter replied that he had done it often.

Dr. Deaver then said that when the *bougie à boulé* is used we cannot be sure of the results. Accurate results can be obtained only by the use of the urethrometer.

He uses filiform bougies if he cannot get the consent of the patient to do an external urethrotomy. He was glad to hear Dr. Morton say that in impermeable strictures he would resort to external urethrotomy. He does not feel at ease, as does Dr. Roberts, when he has passed a filiform bougie through a very tight stricture with the object of allowing it to remain, as it has a tendency to set up inflammation and ulceration of the walls of the urethra. As Dr. Roberts said, some patients are satisfied even if the result is not perfect, but the cases reported by the speaker occurred among the better class of patients—patients who are not satisfied until they are perfectly cured.

He is not in favor of the plan of trying for a long time to pass an instrument through the urethra. We would not follow a similar plan in strangulated hernia. The patient may have cystic kidneys, and he thinks that it is just as bad to prolong operative interference in retention of urine as it is in strangulated hernia. Aspiration had been referred to, but this is merely a temporary expedient, and the stricture will subsequently require treatment; it may be by internal or by external urethrotomy.

The great objection to gradual dilatation is that the instrument is passed into the bladder and bruises the sensitive prostate gland, and he believes that this is one of the most common causes of prostatorrhœa. He did not claim that after internal urethrotomy we may not have to pass an instrument, but four or five weeks is sufficiently long to use a bougie. He added that some strictures are never cured, but he is sure that many can be cured. The operation of dilatation is much more liable to be followed by contraction than is that of dilating internal urethrotomy, which makes only a slight incision. The lips of the incision are not allowed to come in apposition, and it heals by granulation, leaving a cicatrix, which can be discovered only by careful examination. After dilatation the scar is readily seen.

CORRESPONDENCE.

CHICAGO.

To the Editor of THE MEDICAL NEWS,

SIR: At a recent meeting of the Chicago Medico-Legal Society a resolution was adopted to the effect that public *séances* of hypnotism, mesmerism, and magnetism should be prohibited by law, and that hypnotism for medical purposes should be practised solely by duly-qualified medical men, and only in the presence of other medical men or undoubted friends of the patient operated upon. Drs. M. H. Lackersteen, Archibald Church, and J. C. Henry were appointed to present the resolution to the Legislature.

There is a rumor that diphtheria is epidemic in Chicago, but the facts at hand do not seem to substantiate the rumor. Reports from the Health Office show a decrease in the number of deaths from diphtheria as compared with the corresponding period of last year. Added to this are the statements made by many prominent physicians, who, in nearly every case, declare that there is no cause for alarm over the spread of diphtheria or other zymotic diseases. In November, 1890, there were 288 deaths from zymotic diseases, of which number 78 were due to diphtheria, 46 to croup, 67 to typhoid fever, and 13 to scarlet fever. In November, 1889, there were 355 deaths from zymotic diseases. Of these, 125 were from diphtheria, 62 from croup, 68 from typhoid fever, and 11 from scarlet fever. The total death-rate for the month of November, 1889, was 1504, and for November, 1890, 1480, showing a decrease in the general mortality as well as in that of zymotic diseases.

The work of the Woman's Hospital is steadily increasing. Notwithstanding the heavy blow dealt the institution by the death of the president of the medical staff, Dr. William H. Byford, the number of patients treated was greater than during any previous year. The medical department has a capacity of only 43 beds. Not less than 22 have been occupied at any time, and often 40 are filled. The whole number of days' service rendered by the hospital during the year was 11,315, of which 36 per cent. was charitable. The total receipts for the year were $18,416.19; disbursements, $18,385.83.

Dr. D. Mills Tucker, who had been a practising physician in this city for thirty-five years, died at his home on December 10th. He was exposed to cold

while attending a patient, developed acute pneumonia, and died in a few hours. He was born in Worcester County, Mass., in 1819, and was graduated from the Medical Department of Harvard University in 1852 He came to Chicago in 1856, and began to practise when the city was little more than a straggling village. He was one of the first physicians to interest himself in the cure of inebriates, and was medical adviser of the Washingtonian Home during the early days of that institution.

Dr. Thomas A. Clark, while treating a patient in his office, December 8th, was suddenly stricken with apoplexy, and died a few minutes later. He was born on a farm near Louisville in 1825, and was graduated from the Kentucky School of Medicine in 1852. From Louisville he went to Jefferson, Ind., and practised there until 1855, when he came to Chicago. For thirty years he was eminently successful as a physician and surgeon, his specialty being obstetrics.

At a meeting of the Public Service Committee, Dr. J. R. Brandt offered a resolution to the effect that no physician should be allowed to act at county institutions as attendant surgeon or physician who has not previously had a practical experience of five years, or who has not served the full term as an interne at the county hospital. The resolution was referred. Dr. Brandt wanted the office of county physician abolished, as he thought the work could be done for $350 per annum. He thought the office was a sinecure, as the coroner had a physician who made all the post-mortem examinations.

NEWS ITEMS.

The Mattison Prize.—With the object of advancing scientific study and settling a mooted question, Dr. J. C. Mattison, of Brooklyn, offers a prize of $400 for the best paper on "Opium Addiction as Related to Renal Disease," based upon these queries:

"Will the habitual use of opium, in any form, produce organic renal disease?

"If so, what lesion is most likely to occur?

"What is the rationale?"

The contest is to be open for two years from December 1, 1890, to either sex, and any school or language.

The prize paper is to belong to the American Association for the Cure of Inebriety, and will be published in the *New York Medical Journal, Brooklyn Medical Journal*, and *Journal of Inebriety*.

Other papers presented are to be published in some leading medical journal, as their authors may select.

All papers are to be in possession of the Chairman of Award Committee on or before January 1, 1893.

The Committee of Award will consist of Dr. Alfred L. Loomis, President of the New York Academy of Medicine, Chairman; Drs. H. F. Formad, Philadelphia; Ezra H. Wilson, Brooklyn; George F. Shrady, and Joseph H. Raymond, editor of the *Brooklyn Medical Journal*.

The Swatow Mission Hospital.—The largest of the mission hospitals in China is that of Swatow. The number of in-patients treated during the past year was 2679. There were 3151 out-patients, a relatively small number. The expenses were $2275. More than 250 cases of leprosy applied for treatment, to which only palliative treatment could be given. Surgical measures were required in about twenty per cent. of all cases.

Corrigendum.

THE TREATMENT OF FAILING CIRCULATION.

In the article on the "Treatment of Failing Circulation," by Dr. C. S. Bradfute (THE MEDICAL NEWS, January 3, 1891), line 18 from the bottom of the second column, page 16, should read "in the course of *typhoid* fever."

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM JANUARY 13 TO JANUARY 19, 1891.

By direction of the Secretary of War, HENRY D. SNYDER, *First Lieutenant and Assistant Surgeon*, is relieved from duty at Fort Reno, Oklahoma Territory, and will report in person to the commanding officer Camp Guthrie, Oklahoma Territory, for duty at that station, relieving John L. Phillips, Captain and Assistant Surgeon. Captain Phillips, on being relieved, will report in person to the commanding officer Fort Reno, Oklahoma Territory, for duty at that station.—Par. 16, *S. O. 11, A. G. O., Washington, D. C.*, January 14, 1891.

PROMOTIONS.

To be Assistant Surgeon, with the rank of Captain, after five years' service, in accordance with the Act of June 23, 1874:

HARRIS, HENRY S. T., *Assistant Surgeon*, January 5, 1891.

WOOD, LEONARD, *Assistant Surgeon*, January 5, 1891.—*A. G. O., Washington. D. C.*, January 12, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JANUARY 17, 1891.

HORD, W. T., *Medical Director.*—Ordered, as President of the Medical Board, to relieve Medical Director J. Y Taylor.

DEAN, R. C., *Medical Director.*—Detached from Hospital, Chelsea, and ordered to the Medical Board, Washington, D. C.

TAYLOR, J. Y., *Medical Director.*—To be placed on the Retired List, January 22, 1891.

RUSH, W. H., *Passed Assistant Surgeon.*—Orders to the U. S. S. "Newark" are revoked.

ASHBRIDGE, RICHARD, *Passed Assistant Surgeon.*—Orders to the U. S. S. "Saratoga" revoked, and to await orders.

CABELL, A. G., *Passed Assistant Surgeon.*—Detached from Iron Clads and ordered to the U. S. S. "Newark."

LUMSDEN, G. P., *Passed Assistant Surgeon.*—Ordered to the Iron Clads at Richmond, Va.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication, or 250 reprints will be furnished instead of payment, provided request for reprints be noted by author at top of manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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ORIGINAL ARTICLES.

AN EFFORT TO OBTAIN A PERFECT SUBSTITUTE FOR HUMAN MILK.

Based on Chemical and Clinical Studies.[1]

BY BARTON COOKE HIRST, M.D.,

PROFESSOR OF OBSTETRICS IN THE UNIVERSITY OF PENNSYLVANIA.

THERE is no more important subject in obstetric practice to-day than the artificial alimentation of infants. Indeed, there are few questions in the whole realm of medicine that transcend it in interest. In this city, in the past three years, 1887 to 1889 inclusive, there have been, in round numbers, 75,000 living children born; during the same period 16,000 children have died before completing their first year—a death-rate of something over 21 per cent.[2] In other words, one-fifth of the children born alive in Philadelphia die before they are one year old—a stupendous mortality, but other large cities show a still worse record. The chief cause of the high death-rate is undoubtedly to be found in diseases of the digestive tract, which come from bad feeding. This does not appear so plainly as it should in the mortality records of the city. One needs little experience to learn that fatal cases of intestinal infection in young children are reported in the death-certificates under all sorts of misleading names, such as, marasmus, cerebritis, convulsions, inanition, debility, etc. But the fact remains indisputable, that if digestive disturbances could be eliminated from the fatal disorders of infancy, a vast army of children would be saved to their parents, and a large number of citizens be added to the State, with a gain, from a humanitarian point of view, that is incalculable, and from a purely material point of view that could be reckoned in enormous sums of money.

By the march of modern investigation such a result, in great part at least, has become a possibility. It needs only a wide dissemination among the laity and the medical profession of knowledge now in the possession of, comparatively, a few, greatly to reduce the mortality of early infancy. That a large number of physicians need instruction on this subject cannot be denied. Last summer I saw two striking illustrations of the fact. In one case, a child of three months was fed, by order of its physician, on a mixture of one teaspoonful of condensed milk to sixty of water. It had come to the verge of starvation on its diet. In the other case a baby eight weeks old had been ordered by the family physician, in the heat of summer, six ounces of unsterilized milk with Mellin's food every two hours. The child died of cholera infantum. Both these physicians were in active general practice, and I dare say that the children who had fallen victims to their ideas on infant-feeding could be counted in large numbers. And these are but single examples of a large class.

The disadvantages attaching to the use of cow's milk—the only practicable substitute for human milk—in the feeding of infants may be summed up as follows:

Cow's milk differs in the proportions of its chemical constituents from human milk.

Cow's milk, as ordinarily obtained, especially in summer, swarms with many varieties of microbes, and is contaminated, perhaps, with the products of their activity. It is, moreover, acid. Human milk, on the contrary, is drawn from the breast and received into the infant's stomach sterile. It is alkaline.

Cow's milk can be administered in almost unlimited quantities and at any interval. Human milk is supplied by the mother's breast, in quantities and at intervals suited to the demands of her infant's economy.

Each of these factors could defeat an attempt to nourish an infant on cow's milk alone; but, operating together, as has usually been the case, it is little wonder that artificial infant-feeding in the past was one long record of failures. To the theoretical student of the subject at present it might seem that every difficulty has been removed. With the knowledge obtained a comparative chemical study of cow's milk and human milk, notably by Arthur V. Meigs's work, one can construct, with cow's milk as a basis, a correct chemical imitation of human milk.[1] By the labors of

[1] Read before the College of Physicians of Philadelphia, January 7, 1891.

[2] In exact number as follows:

1887—23,140 living births, 5296 deaths under one year.
1888—25,163 " " 4977 " " " "
1889—26,244 " " 5268 " " " "

[1] The future has much to teach us in the comparative chemistry of proteids in milk. In Meigs's formula, that which is designated by the loose and incorrect term "casein," but which should be known as caseinogen, is reduced to the proportion of this substance usually found in human milk. But the information which physiological chemists must, before long, furnish practical workers in

Jeffries, Soxhlet, and others, the chemical imitation of human milk can be administered in a sterile condition. And by the investigations of Snitkin, L. Emmett Holt, and others, we have definite and correct ideas in regard to the quantity of food to be given at each feeding, the interval that should elapse between the feedings, and the rate of increase in quantity required from month to month. With such knowledge, which is but recently available, it would seem possible to construct an artificial infant-food equal in all respects to the mother's milk. But the confidence inspired by this idea would sooner or later be rudely shaken in practice.

For some time my own experience led me to hope that we had at last secured the ideal infant's food. My system, based on Meigs's and Rotch's work, with sterilization and adjustment of quantity and interval to the infant's age, is expressed upon the card which I had printed for distribution among those of my patients who required it.

CARD No. 1.

1. Have ten bottles prepared clean every morning.
2. Put in each of them, through a clean glass funnel:

Cream	dr. iv.
Milk	dr. ij.
Water	oz. j.
Milk sugar	gr. l.

[One measure].

3. Stopper the mouth of each bottle with dry baked cotton, and sterilize for twenty minutes.
4. Set aside to cool.
5. Add lime-water, dr. ij, to each bottle before use.
6. Apply a plain rubber nipple to the bottle.
7. Warm to blood-heat in warming-cup.

For a time, I say, this plan yielded the most gratifying results. One child, in particular, I recollect. It weighed ten pounds at birth. The mother had fever for about three weeks after delivery, from an infected endometrium, during which time the child was kept upon the bottle. After a while the mother's milk gradually increased in quantity, so that at the end of the first month the infant was fed at the breast, with the exception of a bottle morning and evening. A week later the child was seized with acute dyspeptic symptoms and diarrhœa. I attributed the trouble to the artificial feeding, which I ordered discontinued; but the child grew worse. The mother's milk was then analyzed, and found to contain but 0.8 per cent. of fat, with 1.17 per cent. of casein. The artificial feeding was resumed, and the little patient at once picked up, gaining from that time an average of two pounds a month up to the last report that I received at the sixth month. But soon there came a succession of failures. The most conspicuous was in the case of a healthy infant born at term of exceptionally healthy and well-developed parents. From the first it was necessary to give this child the bottle. It did not thrive. On the contrary, by the third week it had become obstinately constipated and was visibly wasting away. From my own observation, and from what I had heard of others' experience, I had already learned to suspect that sterilization is the disturbing factor in the effort to produce an ideal infant-food. Consequently, the infant was taken from the mixture described on the card, and put upon condensed milk (1 part), water (12 parts), and cream (1 drachm to an ounce of the mixture). The change in the child's condition was rapid and striking, and at the third month, when I saw it last, it had become in weight, color, and appearance as fine a specimen as one would wish to see.

About this time I assumed charge of the children's wards in the Philadelphia Hospital, with the determination to learn what change sterilization caused in the chemical imitation of human milk and to find a way, if possible, of obviating the alteration. On first thought it seemed that the trouble lay in a disturbance by heat of the chemical constitution of the mixture. It had been asserted that, in boiling, milk loses 3 per cent. of gases (CO_2,N,O) and that 20 per cent. of the albuminoids is coagulated in a thick scum upon the surface (Townsend), and I thought that sterilization might also be productive of a somewhat similar chemical change. But on further consideration, and especially after reading two very interesting articles by Béchamp,[1] it seemed more reasonable to suppose that the unfavorable action of heat upon milk consists in a coagulation of the albumin, especially that around the fat globules, making them, already tougher than in human milk, still more tough and difficult of disintegration in the process of digestion. The question, however, could only be settled by a careful chemical study, and this Dr. Hiestand very kindly undertook for me. The interesting report of the work, just concluded, follows in full:

NOTES ON THE EFFECT OF STERILIZATION UPON MILK.

"To determine what changes occur in milk as a result of sterilization, analyses were made of numerous samples of normal cow's milk and of the feeding mixture used by Dr. Hirst.[2] The results of these experiments showed no change in the total solids of

regard to the relative proportions of lact-albumin in the two milks, and as to the quantity of whey-proteid which appears on the formation of the curd or casein, may, and I think will, necessitate a change in the formula for constructing a chemical imitation of human milk. In this connection see the interesting article by Halliburton, Journal of Physiology, xi. 6, November, 1890.

[1] Bulletin de l'Académie, 3d série, t. xx. p. 718 and Ibid., t. xxiv. p. 214. Béchamp shows that the fat globules in milk are surrounded by a pellicle of albumin; that in human milk this pellicle is more delicate, and more distensible, than in cow's milk.

[2] See card No. 1.

any sample examined before and after sterilization. The amount of albuminoids, fat, sugar, and salts in a given sample of normal milk, or of the feeding mixture referred to, may be recovered after sterilization without loss.

"Subsequent experiments show, however, that the organic constituents do undergo certain important alterations in condition which bear upon the question of assimilation. Observations were directed mainly toward the condition of the albuminoids, fat, and sugar, with the following results:

"I. ALBUMINOIDS.—A. Sterilized and unsterilized portions of a milk-sample were saturated with magnesium sulphate, the precipitated casein separated by filtration, and the albumin estimated in the filtrate. The unsterilized sample yielded 0.33 per cent. of albumin; the sterilized only 0.013 per cent., about 96 per cent. of the albumin, in the latter case, having been coagulated by heat and carried down with the casein.

"B. The percentage of casein in the foregoing sample of milk was 3.27, as shown by a calculation based upon the total nitrogen in the milk. On account of the difficulty of separating the coagulated albumin from the precipitated casein, no observations were made on the condition of the casein before and after sterilization.

"A number of experiments to determine the changes in casein after boiling have been undertaken by various observers; but, thus far, the results have been too conflicting to be reliable. Soldner (quoted in the report of the United States Department of Agriculture, 1890) gives some notes made by Hammersten to the effect that the casein in milk is changed by a temperature of 212° F. The evidence seems to be that the calcium in milk is in some way combined with the casein, and that this combination is modified by a boiling temperature. The exact nature of this change is not well understood. It seems probable, however, that an alkaline calcium compound is formed, which may overcome the natural acidity of the milk. This would explain the altered behavior of rennet in sterilized milk. The experiments incident to his report corroborate those of previous observers and show that sterilized milk coagulates with rennet much less promptly than unsterilized milk. The addition of a small quantity of acid is found to restore to the milk its coagulability by rennet, probably by overcoming the alkalinity produced by boiling.

"II. FAT.—After sterilization the milk was covered with what appeared to be a thin layer of butter-fat. To ascertain whether any fat-globules were freed from their albuminous envelopes, a portion of sterilized milk was rotated in a centrifugal machine for several minutes, along with an equal quantity of unsterilized milk in a separate flask. It was observed that a noticeable proportion of free butter-fat was obtained from the sterilized sample, while the unsterilized sample yielded only the usual layer of cream. This and the following experiments show, however, that only a small proportion of the fat is freed, and that, on the other hand, the globules not liberated have their envelopes so altered by heat as to lessen their tendency to coalesce:

"*a*. Sterilized and unsterilized portions of milk were churned, and a note made of the time required to form appreciable amounts of butter. The unsterilized portion yielded butter in one-third less time than the sterilized portion.

"*b*. Sterilized and unsterilized milk shaken up with equal parts of ether and petroleum spirit, and allowed to stand for twenty-four hours, showed, by microscopical examination, no obvious variation in the size or condition of the fat-globules.

"III. SUGAR.—Examinations of milk before and after sterilization were made both by polarimetric and reduction methods. It was found that the whey of the unsterilized sample had a dextro-rotatory power appreciably greater than that of the sterilized sample. The actual figures for the amount of sugar solution taken were, for the sterilized sample, 3.47, and for the unsterilized sample, 3.87. These figures were confirmed by duplicate analyses. The comparative reducing power of both samples on Fehling's solution was, however, but little affected, the slight differences noted being within the limits of experimental error. The exact nature of the change indicated by the polariscope has not been determined.

"The following is an epitome of the ascertained results of sterilization:

"1. Albumin coagulated.

"2. Casein less readily precipitated by rennet than in normal milk. Acid corrects this condition.

3. "Fat is freed to a slight extent; fat not freed has a lessened tendency to coalesce.

"4. Sugar undergoes some change, as shown by its lessened dextro-rotatory power.

"The considerations suggested by a knowledge of the foregoing facts are:

"I. The coagulation of milk-albumin by sterilization may render the milk more difficult of digestion.

"II. Sterilization interferes with the coagulability of milk by rennet, and presumably, therefore, with its digestibility by the gastric juice. [This scarcely agrees with our present ideas.—B. C. H.]

"III. Free fat, as found in sterilized milk, is probably not readily assimilated in infant-food. The fat not free, being enclosed in a less-easily destructible envelope, is probably slow of digestion.

"For valuable assistance in conducting these experiments I am greatly indebted to Mr. William Beam. My thanks are also due to Dr. Henry

Leffmann for the use of his laboratory, where the experiments were made.

"ELEANOR MOORE HIESTAND, M.D.,
" Demonstrator of Chemistry in the Woman's Medical College of Pennsylvania "
" PHILADELPHIA, December, 1890 "

Being sure that the chemical study would bear out the theory in regard to the effect of heat upon the fat-globules and albumin, I adjusted the clinical work to this idea as soon as the chemical investigation had been fairly started. The only way to obviate the action of heat lay obviously in a partial predigestion of the milk and cream; and the only agent at our command to accomplish this result is pancreatin.

The chemical study takes no account of predigested food, as Dr. Hiestand and myself were working independently at the same time, and were ignorant of each other's work till the whole was completed. One of the methods, described in the report, of comparing sterilized with unsterilized milk suggested to me the following idea: If predigestion with pancreatin really affects the fat-globule and makes it easier to free the fat, this action should be demonstrable by the different effects of churning upon predigested milk and cream, upon sterilized predigested milk and cream, and upon sterilized milk and cream. In the first, three minutes' churning of half a tumbler of the mixture produced enough butter more than to fill a teaspoon. The churn used is a small tin affair sold in housefurnishing shops for making whipped cream, which it takes ordinarily about four minutes to do. In the second, less than four minutes' churning of one and one-half ounces produced a good-sized lump of butter. In the third, it took about twelve minutes to form butter at all, and there was not as much by that time as had been produced by four minutes' churning of the predigested sterilized specimen.

There remains to be supplied one more chemical link in the chain of evidence. The stools of children fed upon sterilized and predigested sterilized milk should show a difference in fat contents. We already know that a diet of boiled milk is accompanied by an excess of unassimilated fat in the stools.[1] I should expect to find less unassimilated fat in the stools of infants fed upon predigested sterilized milk than in those fed upon simple sterilized milk. I hope to have this point investigated in the near future, or to learn the truth about it from the work of others.

Still retaining the chemical proportions suggested by Arthur V. Meigs (with the single exception of sugar), and observing the rules for quantity and interval suggested by Snitkin and Holt, the following card was drawn up:

[1] Vasilieff: Thèse inaugu., St. Petersburg, 1889.

CARD NO. 2.

[Front.]

1. Have ten nursing-bottles prepared clean every morning.
2. Take

Cream	5 ozs.
Milk	2½ ozs.

3. Put in skillet; add pancreatin powder; heat over alcohol flame for six minutes; stir and sip constantly; *do not overheat.*
4. Of this mixture, put in each bottle 6 drs. (to make 2-oz. bottle). Use funnel.
5. Add to each bottle 10 drs. sugar solution.
6. Stopper the mouth of each bottle with dry, baked cotton, and sterilize for twenty minutes.
7. Set aside to cool.
8. Before use, put bottle in warming-cup; apply nipple immediately before giving it to infant.

Make sugar solution by dissolving 1 oz. sugar of milk (1 powder) in a pint of warm water.

[Reverse.]

Age.	Interval.	Number of feedings in 24 hours.	Amount of food at each feeding.	Total amount in 24 hours
1st week . . .	2 hours.	10	1 oz.	10 ozs.
2d to 4th week .	2 hours.	9	1½ oz.	13½ ozs.
2d to 3d month	3 hours.	6	3 ozs.	18 ozs.
3d to 4th month	3 hours.	6	4 ozs.	24 ozs.
4th to 5th month	3 hours	6	4–4½ ozs.	24–27 ozs.
6th month . .	3 hours.	6	5 ozs.	30 ozs.
8th month . .	3 hours.	6	6 ozs.	36 ozs.
10th month . .	3 hours.	5	8 ozs.	40 ozs.

The pancreatin powder, for the quantity indicated on the card, consists of

℞.—Pancreatin	2½ grains.
Bicarbonate of sodium . .	5 "

The sodium salt furnishes the alkalinity desired, so that lime-water may be dispensed with.

The objection urged against the partial predigestion of an infant's food, that, by so doing, one deprives the digestive jucies of their natural work, and thereby incurs the risk of atrophy of the digestive glands, while at first sight forcible, is in reality weak. If, by this method, the food-mixture is reduced to a condition in which there is about as much for the child's digestive powers to do as though it were fed on human milk there is no danger of abrogating any digestive function.

The sugar of milk is prepared in less amounts than would be called for in an exact chemical imitation of human milk. I am not sure that I will not still further reduce the proportion. Although sugar from cow's and human milk is chemically identical, physiologically it cannot be so, for I have often remarked the diuretic properties of lactose from cow's milk when given to an infant, and I have verified the discovery made by others that the

lactose of cow's milk can produce a very marked glycosuria in bottle-fed babies.

All the infants in the Philadelphia Hospital during September, October, November, and December that were deprived of their natural nutriment, to the number of twenty-one, were fed after this plan. They were weighed daily and their weight entered upon the weight-sheets which I had printed in the hospital. At first a daily record of their stools was kept, but as none of them became constipated this was not continued. In this connection I must express my thanks to the nurses of the hospital for the faithful manner in which they performed an arduous task.

The loss in these four cases was not due to the feeding. In two it was caused by disease, in two others, I think, by the unfavorable hygienic condition in the hospital. The five remaining children died, and naturally lost considerably in the course of their fatal illness. Two of these children were syphilitic, with extensive skin eruptions, and in one of them severe purulent ophthalmia. One died of capillary bronchitis, the other of very severe entero-colitis. This case was especially interesting, for in spite of the care to sterilize its food, the same symptoms were developed with the same fatal result as though the child had received the worst-infected milk procurable. I believe that in

CHILDREN'S WEIGHT-SHEET.

These weights are given by weeks, and in pounds and ounces, thus, 7.2 = 7 lbs. 2 ozs

Name.	Age.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16
Clarence Wright,	2 weeks.	8.6	8½	7.15	8.2	7.14	7.0	6.11								
John Powers,	2 "	6.9	6.3½	5.15	6.1	6.3	6.9	5.14	5.13	5.13	5.8					
Walter Jones,	3 "	6.15	7.1	6.14	7.2	7.1	7.2	7.0								
Gilbert Burney,	6 "	6.04	5.15	6.4	6.2	5.10	5.8									
Clara Lyle,	7 "	7.0	7.8													
James Ryan,	2 months.	6.12	6.11	6 13	7.0	6.12	6.7½									
Joseph Marianok,	2 "	8.0	7.12	7.13	7.12	7.11	7.10	7.2								
George Carpenter,	3 "	9.8	9.4													
Elizabeth Bartling,	4 "	8.6	8.10	9.0	9.8	9.11	10.2	10.5	10.10	10.15	11.8	12.0	12.5	12.8	12.12	12.14
Joseph Howard,	7 "	12 12														
James Lappan,	7½ "	11 13	11.15	11.8												
Nellie O'Brien,	8 "	10 3	10.1	5.11	9.9	9.14	9.15	9.13	9.8	10.0	10.5	11.2	11.8	11.8	11.12	11.15
John Roth,	8 "	9.9	9 3	8.6	8.8	8.5										
John Hamilton,	8 "	9.9	9.0	10.3	10.5½	10.0	10.1	10.2	10.1	10.4½						
Nellie Johnson,	1 month.	6.13	6.12	7.3	6.15	6.8	6.8	6.13	6.12							
Florence Embers,	3 weeks.	5.2½	5.11	5.8	5.8	5 5	5.5									
Annie Harrison,	2 hours.	5;9														
Annie Whalen,	2 days.	4.13														
Edward Walsh,	8 months.	10.8	10.10													
Nellie Fries,	4 weeks	3.8½	3.7	0.13												
Lenmon Collins,	3 months.	7 4														

It will be seen by the tables that four children were under observation less than a week. They will not be considered. The remaining seventeen infants were of all ages under eight months, some of them very young. Of this number eight gained in weight, nine lost. Of the latter number four lost only a slight amount.

CASE I.—James Ryan, two months old, lost 4½ ounces in four and one-half weeks. In the first three weeks in the hospital he gained 4 ounces, but in the last twelve days before leaving, during which time he had bronchitis, he lost 8½ ounces.

CASE II.—George Carpenter, three months old, lost 4 ounces in one week and a half.

CASE III.—J. Lappan, seven and one-half months old, lost 5 ounces in two weeks.

CASE IV.—Nellie Johnson, one month old, lost 1 ounce in six weeks. This child gained 9 ounces in the first three weeks, but acquired what was at first thought to be pneumonia, but is now believed to be tuberculosis, with consolidation of the upper part of one lung. During the three weeks of her disease she has lost 10 ounces.

children of miserable development, as in this case, the food, though given sterile, decomposes in the intestinal tract, for it is only reasonable to suppose that, when all other vital functions are performed imperfectly, the digestive juices are insufficient not only to digest the food, but even to keep it from rapid putrefaction. The third infant of this series, Gilbert Burney, died of tuberculosis. The whole upper lobe of one lung was consolidated. Of the other two children, one showed a scar of old ulceration in a Peyer's patch, and several fresh ulcers with congestion of the large intestine and disease of a few solitary follicles. This was undoubtedly a case of entero-colitis from food-infection, to be explained, I think, as in one of the syphilitic children. The second infant presented really nothing in the post-mortem examination to account for the death. There was no appreciable entero-colitis, though the mesenteric glands were slightly enlarged. The body was intensely anæmic and very thin. The child appeared simply to waste away.

Of the children who gained in weight, I would

direct attention particularly to one, Elizabeth Bartling, aged four months, who gained 4 pounds and 8 ounces in three months and a half, increasing from 8 pounds 6 ounces, to 12 pounds 14 ounces. It is a significant fact that this infant was not in the foundling ward at all, but in a much larger, better aired room, and in charge of her mother. She was one of twins, one of which was kept on the breast, the other on the bottle. The bottle-fed baby has gained faster than its sister.

I am conscious of much that is imperfect in this clinical study. My material was numerically small. The condition of the infants, many of them picked up on vacant lots, others with parents in the last stages of phthisis, or in the insane department, was in the main very bad, and the environment in the foundling ward of a large hospital is, at the best, unsatisfactory. On one point, however, I am satisfied, namely, that the work of the nurses and resident physicians was earnestly and carefully done. It is on work of this character alone—careful attention to details of feeding and of observation—that a true system of artificial alimentation can be founded. It is a tedious and a troublesome task, but it will amply repay the hardest work—for the discovery of an ideal infant's food that gives as good results as mother's milk will do as much to save life and prevent disease as Jenner's discovery, or that of Koch, even if it proves all that is claimed for it.

In conclusion, a few words as to the practical execution of the directions on card No. 2 in private practice—small matters, apparently, but they may mean the difference between failure and success. First, in regard to the sterilization. This is undoubtedly a burden to the child's attendant, which it should be the physician's care to make as light as possible. The best sterilizer, in my opinion, for convenience and efficiency, is the Arnold's steam cooker. It is easy, however, to devise some arrangement, in a family too poor to buy a sterilizer, that will answer the purpose. As to the bottles, they should be, according to the card, "prepared clean every morning." I have lately seen somewhere the advice to boil the nursing bottles for an hour every day. It reminded me of the excesses committed in the name of antiseptic obstetrics at a time when, in certain hospitals, the child emerged from the vagina under a carbolized spray. It is only necessary to clean the bottles with a strong soda solution and bottle-brush, and then rinse them out well in hot water. They and their contents are made sterile or chemically clean in the sterilizer at the same time. The bottles should be of a form that permits of easy cleansing; as far as possible from the shapes that are at present most in use. Rotch's bottles are the best in this respect upon the market, but their shape is awkward, and their price precludes the possibility of their general use. A drug firm is at present making for me a feeding-bottle which will have a wide mouth, almost no shoulder, no sharp angles, and shall be of moderate price.

Very careful directions must be given in regard to the predigestion of the milk and cream. The time—six minutes—should be indicated by an open watch before the person who prepares the food; it should never be guesswork. The direction should be given never to let the preparation get hotter than one usually drinks the morning coffee. By the end of six minutes the mixture begins to have a distinctly bitter taste. It always takes a minute or two to distribute the milk and cream among the nursing-bottles; this should be done quickly and everything should be in readiness to begin the sterilization at once, for should the mixture in the skillet remain hot for ten minutes in all, it might be so bitter as to be unfit for use. The steam heat, of course, stops the digestion at once.

It is well worth the trouble, in private practice, to conduct properly the whole procedure once before the child's caretakers.

Finally, the nurse or mother must be told to hold the child in the lap while it is fed and to make it consume some time, about ten minutes, in taking the bottle. This is a matter usually understood, but in some cases it needs the physician's express attention. In all cases it is essential to success. I was much impressed with the truth of a remark made by a lady, once a trained nurse, now the wife of a distinguished man and herself a mother, who said on a visit to the foundling ward recently, "It is not so much science that these babies need as a mother's coddling."

ACUTE DELIRIUM—PROBABLY AN INFECTIOUS PROCESS.[1]

BY JAMES HENDRIE LLOYD, M.D.,
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UNDER a multiplicity of terms a form of serious brain-affection, characterized especially by delirium and rapid exhaustion, has been described by various authors. Some of these terms are typhomania, or Bell's disease, delirium grave, acute delirious mania, and *délire aigu*, by French writers. The older writers were apt to speak of the disease as "paraphrosyne," or phrenitis, thus indicating their conception of the morbid process underlying it. Some modern authors, with their passion for clinical differentiation, have probably included kindred cases of a mild type, under such titles as stuporous insanity and confusional insanity. The type of the

[1] Read before the Philadelphia Neurological Society, November, 1890.

disease is well exhibited in the delirium which attends typhoid fever and other infectious diseases, and the morbid process is probably not dissimilar. This disease, or, properly, class of diseases, has been also described under special names, according to its causation, thus, puerperal mania, post-febrile insanity, post-operative insanity, septicæmia, exhaustion from overwork, sewer-gas and other poisoning, have all included this acute delirious condition. A few physicians fall back upon the word "meningitis," to explain the disease, and it may be a question whether a few of the cases have not been called delirium tremens.

Some authors include in delirium grave only rapidly-fatal cases, while others include less severe, long-continued, and curable cases. The mere clinical distinctions are too often arbitrary, and are entirely uninstructive as to the exact causation. I have seen one case which proved fatal in less than three days, while another extended over several weeks, and recovered. In both of these cases the condition was a typical delirium, with dried secretions, brown tongue, rapid pulse, variable temperature, and exhaustion, with emaciation. There is no sufficient reason to place these cases in separate classes, with distinctive names, simply because one died and the other lived. So, again, the type of delirium may vary, as may also its severity. One case may be of a low, muttering form, tending to stupor, dementia, and death, as has been reported after some of the exanthematous diseases, such as scarlatina and smallpox; another may exhibit rather a confusion of intellect with active hallucinations, and persist for weeks, with final recovery, as is frequently seen after childbirth. This fact does not seem to me a sufficient reason for a classification which shall be final, especially as the active causation in each case is practically as yet unknown.

The symptomatology of these cases varies, but presents a sufficient number of resemblances to constitute a simple broad class. The mental symptom is usually wandering delirium. In milder cases the attention can be momentarily arrested, and a question or two answered; but the mind soon lapses into more or less complete object-unconsciousness. Subject-consciousness is much confused, and is apt to be dominated by visual and aural hallucinations. From this stage all grades of delirium to complete stupor and coma can be observed. The physical state accompanying the delirium is apt to be that which is spoken of generally as "typhoid," and grows more marked the longer the acute stage lasts. The tongue becomes dry and brown, and sordes form. The breath is offensive. The pulse is rapid and compressible. There are muscular unsteadiness, tremor, and incoördination. The temperature occasionally rises, but not in all cases, and in my experience pursues no regular course. The gastro-intestinal tract in my cases was not involved, except that there were aversion to food and retention of fæces. In puerperal cases of this type there may be foul lochia and pain on pressure over the uterus, but these symptoms are not present in every case. In two well-marked cases of delirium following childbirth I could discover no focus of septic infection, although I searched for it. Still, I believe they were the results of infection. In one puerperal case seen in the Pennsylvania Hospital for the Insane, under Dr. Chapin's care, the patient's active delirium came on within a month after confinement, and was marked by anæmia, emaciation, and a brown dry tongue. She had had at first fleeting, delusive ideas, and rapidly became immodest, restless, and troublesome in every way. She talked incoherently, but later had a fixed, staring gaze, with dilated pupils, and would not respond to questions. There was no abdominal soreness and no fever. The blood-count showed that the corpuscles were reduced twenty per cent. It is usual to call such cases "puerperal insanity," yet their likeness to acute delirium, especially when they are severe, is too great to be ignored. Such cases sometimes run a very rapid "typhoid" course, and die, but in the main the prognosis in puerperal cases, if taken in time, is good.

In some of the cases, called post-febrile, such as are seen after scarlatina, smallpox, and typhoid fever, the early stage of the acute delirium is coincident with the acme of the infectious process. The mental condition at first is looked upon as merely the delirious reaction so commonly seen in the exanthemata, and is no doubt identical with that reaction; but as the specific disease subsides it is found that the brain-cells have not recovered from the toxæmia, and a psychosis results which may pursue a variable course, either as confusional insanity, insanity of fixed delusions, or, rarely, dementia. These cases are of special interest, because no one doubts that they are due to infection; hence, in them the action on the convolutions of specific infectious products, probably ptomaïnes, may be observed, and important hints and analogies supplied for the understanding of similar cases in which infection can only be surmised, and not demonstrated.

In the fatal case which Dr. Tull has reported (see page 127), and which I saw with him in consultation, the onset was very sudden and the course very rapid. In this case there was no known source of infection. We could exclude with reason alcohol, syphilis, uræmia, lead, and probably all the known zymotic poisons:

The patient had worked in a district which possibly was malarious. He was seized on a Saturday,

at midnight, and died on the following Tuesday morning, living less than sixty hours after the onset. He was an unusually robust man, less than forty years old, one whom it was not easy to kill. He was at first acutely maniacal, with what seemed slight hysteroidal symptoms, and his attention was held with difficulty and but for a moment. There was great motor disorder, so that he had literally to be held in bed. He struggled, resisted, spoke not a word, had stareing eyes, refused food, and seemed at times rather emotional and histrionic. His pulse at first was strong and good. His temperature varied, without regularity, and once rose to 103°. It was sometimes normal. His urine was not albuminous. He sank rapidly, as if under the influence of some baleful intoxicant, became comatose, and died. The autopsy revealed to the naked eye nothing but white streaks in the perivascular sheaths, which probably indicated the first attempts of nature to meet an invading irritant poison.

The diagnosis of some of these cases is extremely perplexing:

In a case which I saw with Dr. Gittings, in West Philadelphia, the patient, a man aged about forty-three years, lay for more than two weeks in a stuporous delirium. He was aroused with difficulty. His tongue was dry, brown, and hard, and his pulse feeble. There were absolutely no other symptoms to guide in forming a diagnosis. His temperature seldom, if ever, rose above normal. His urine was frequently examined, both chemically and under the microscope, with negative results. Alcohol and lead were not factors in the case. Syphilis was excluded as well as it usually can be, and the post-mortem lesions did not indicate this poison. The general appearance of the patient was somewhat like that of a man profoundly ill with typhoid fever, but the afebrile temperature, the absence of abdominal symptoms and eruption, negatived such a diagnosis. There was no history or appearance of trauma. An examination of the eye-grounds by Dr. de Schweinitz gave no results. At the autopsy the brain was removed before the great vessels in the thorax were cut—an important precaution. There was undoubtedly a great deal of blood in the brain, but a careful inspection of the vessels, membranes, and convolutions revealed nothing which could in any way explain such a grave disease. The longitudinal sinus contained a long, slender thrombus, which, however, did not occlude the calibre of that canal.

In a case under my care, in the Philadelphia Hospital, a protracted delirious state came on in a patient who had been for a year in a simple maniacal exaltation. I do not, of course, call it a case of acute delirium in the sense in which that term is usually employed. It was rather a delirium engrafted upon a mania. The case had all the usual accompaniments: altered secretions, rapid pulse, muttering incoherence, etc. The interesting fact is that *after* this delirium had been established for some time the patient had a diffuse cellulitis of the leg, erysipelatous in appearance. There was evidence here of some infection, but of what character I could not determine.

The symptoms of meningitis, or meningeal irritation, are seen in some of these acutely delirious cases. The following interesting case was admitted into the Pennsylvania Hospital for the Insane, where I examined the patient and signed the certificate. I am indebted to Dr. Chapin for notes of the case:

The patient was a woman, aged twenty-one years, who was reported to have had a "malarial attack" two months before admission. This illness left her in an impaired mental condition, marked by agitation, mental confusion, insomnia, and emotional disturbance. She rapidly grew worse, and was admitted to the hospital with a diagnosis of acute delirious mania. When I saw her she was in a typical delirious state. She was entirely incoherent and inattentive, muttering, and expressing what seemed to be fragmentary, delusive ideas. She evidently had hallucinations. The prevailing tone was apprehension and distress. She was restless, and was kept in bed with difficulty. Her tongue was coated, bowels constipated, pulse 105, and temperature 99⅘°. The pupils were dilated. A very marked symptom was the muscular spasticity, with convulsive movements in the hands and arms, and much exaggerated patellar reflexes. Her urine was examined in the hospital, and showed neither albumin nor casts. During the last week of life her temperature rose steadily day by day, until just before her death, when it was 104⅘°. Her skin was hot and oily. The loss of object-consciousness in this case was almost complete. An autopsy was refused.

It is notable in this case that hyperpyrexia was present, as well as a general spastic state of the muscles approaching a convulsive condition. The exact nature of the primary infection was apparently not made out It was called "malaria," but this term is so loosely used in the profession that often little meaning can be attached to it.

In the brief review here presented of these cases it has not been my aim to form any theory of causation. No one theory can cover all these cases; no one special *materies morbi* can explain cases so widely separated as a delirium happening after smallpox on the one hand, and a puerperal delirium on the other. Many of the causes put down in the text-books are entirely inadequate, in my opinion, to account for the delirium in the vast majority of cases. These causes are anæmia, exhaustion, mental and moral shock or strain, such as grief, fright, worry, etc. These may be contributory causes, and in the case of blood-impoverishment we have, probably, an important predisposing cause: but it seems to me that we want something more definite and tangible than worry to explain the death of a strong man in less than three days from the onset of the disease; something more

reasonable than an uncertain "malaria" to explain an acute delirious mania, with symptoms of meningitis, in a vigorous young woman.

In the cases following the exanthemata, and in the puerperal cases, an infectious poison is probably the immediate exciting cause. Clark gives details of forty patients with puerperal insanity, of whom nearly 50 per cent. had septicæmia or simple inflammatory trouble about the uterus. Clouston's puerperal cases showed a much higher range of temperature than any other class of cases—an "alarming result," as he thinks, of septic and inflammatory disorders. Since the time of Hippocrates this septic delirium following childbirth has been noted. The father of medicine himself reports a fatal case following a delivery of twins, in which case there were suppressed lochia, chills, insomnia, incoherence, convulsions, suppression of urine, coma, and death. Guislain distinguishes what he calls puerperal meningitis, which is characterized by sweats, fever, abdominal pain, and coma, and is evidently a septic delirium. With an increasing knowledge of septic disorders in childbed we shall probably hear more in time to come of sepsis as a cause of insanity in the puerperium.

But the cases in which we have a sudden explosion of delirium, without any recognizable source of infection, are not so easily explained—in fact, are not yet explainable at all. We are left here to speculation.

In Dr. Tull's case we found a perivascular engorgement. Possibly, ere long the case would have presented distinct pus-formation, and pus in the brain means infection. We stand to-day probably upon the border-land of a new domain in pathology, physiology, and, above all, animal chemistry.

It is premature to dogmatize, but it has appeared to me from a clinical study and comparison of this group of cases, that the symptoms point in the direction of an irritant poison. In his recent work Bevan Lewis has given the most complete and profound study of the morbid anatomy of the brain which has appeared in our language. It is noteworthy that he gives special prominence to the lymph connective tissue, and its "scavenger cells," which are found gorged with products of "intercellular digestion" especially in cases of rapid waste and deterioration of the cortical and neural tissues.

The microscope, however, will, probably, not continue to be the court of last resort in the study of mental disease. It is, after all, only an aid to the eye, and does not show things essentially invisible to the eye. It, probably, cannot show the vito-chemical reactions of the nerve-cell better than it shows the reaction between an acid and a base. It has already demonstrated so often, and in the hands of so many, the slight morbid changes in capillaries and neuroglia, as seen in these early fatal cases, that to repeat them again and again does not add to knowledge.

In the language of Montaigne: "*Je raconte, je ne juge pas*"—I relate these cases, I do not give final judgment upon them.

REMARKS ON ACUTE DELIRIUM.[1]

BY JOHN B. CHAPIN, M.D.,
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HAVING been kindly asked by Dr. Lloyd to make some remarks upon the cases reported by him, it has seemed the better course to offer some general observations which they suggest. Few physicians from their own experience can have much to say of *acute delirium* (a term which Dr. Lloyd and Dr. Tull seem to prefer). As the disease is of rare occurrence, few physicians see a single case in the whole course of their practice, and typical cases are of infrequent occurrence in hospitals. Dr. Lloyd, like others, may have been surprised at the sudden onset of grave symptoms of an anomalous and unaccountable character, and at the steady progress of the disease to a speedy and fatal termination. I confess to having experienced such a feeling, as well as chagrin that all available measures applied for the relief of the patient seemed of no avail to prevent a fatal result.

As early as 1849, the French (Brierre) applied to cases of this class of diseases the term *acute delirium*. Dr. Luther Bell, during the same year, reported a number of cases with symptoms which he declared made out "a new form of disease," or a disease not previously recognized. From the rapid "emaciation," the appearance of sordes on the teeth and mouth, and the low condition of the patient, the term *typho-mania* was also used, suggested probably by the prevalence of typhus in the larger seaport towns at that time, and a similarity to the asthenic character of that disease. The Germans (Dr. Schüle, 1868) have recognized the group of symptoms presented by Dr. Lloyd's cases as a distinct form of disease to which they have applied the name *acute delirium* while in England, Dr. Blandford and others have used the term *acute delirious mania*, which seems to me appropriate and consistent with our usual nomenclature. The disease is a mania accompanied with active delirium.

If Dr. Lloyd has used the term *acute delirium* from what was apparently in his mind as to the possible etiology of these cases, a new field of broader speculation and investigation certainly is opened. That cerebral disease, with psycho-motor disturbance, has appeared even in an epidemic form from the

[1] Read before the Philadelphia Neurological Society, November 24, 1890.

inhalation of sewer-gas and the effluvia of old privy vaults is well known. The so-called meningitis at the Pittsfield (Massachusetts) Seminary, and at Aurora, New York, was due to the ventilation of privy vaults into the school apartments by closed passages. I myself have observed 40 out of 300 persons in one building prostrated in the course of twenty-four hours with cerebral and spinal pains, vomiting, sense of weakness, and several of the cases with delirium. So sudden was the onset that the illness was suspected at first to be due to poisoned food, yet was traced to the introduction of sewer-gas through an unused trap.

The frequent occurrence of cerebro-spinal and spinal meningitis in Philadelphia is of comparatively recent date, and is, I believe, to be largely attributed to the existence of drainage wells in houses and defective ventilation of sewer-pipes and water-closets.

While there is a strong presumption that meningeal disturbance, attended with delirium and motor excitement, results from infectious causes, *acute delirium* or *acute delirious mania* cannot be said to be caused by meningeal inflammation. The post-mortem appearances are of such a negative character that the centres of life, intellect, and sensation would seem to be mainly involved, no traces of physical disease and change being observed, as a rule. Yet, in the present state of our knowledge, with clues leading to new lines of scientific investigation, can any one wholly ignore the suggestion that Dr. Lloyd has presented?

While the sudden appearance of the prominent manifestations may suggest the existence of an active infectious process, it must be borne in mind that when we obtain a history it will be ascertained there has been a strain from overwork, worry of some kind, prolonged insomnia, or some moral shock. In other cases there are excesses and possibly other causes of which we can ascertain nothing. I can say of one case that a winter of social dissipation in Washington was a part of the history, and of another, frequent childbearing and constant domestic cross-purposes resulting in exhaustion and insomnia. The death of Horace Greeley from *acute delirious mania*, after the mental strain attending his political canvas is well remembered. The cases that I recall occurred in persons apparently well-nourished physically. It could not be said of them they were constitutionally neurotic, yet nervous heredity has often been noticed. After a few days of noticeable hurry and worry about small, non-essential things, which may not be recalled until the disease has developed, and may not even attract attention at the moment, and without pronounced prodromic symptoms, the patient may awaken in a confused or delirious state. There has been no chill, vomiting, headache, or spinal pains. The attention of the patient may be roused and held for a brief period in exceptional cases, but as a rule even this is impossible. The mental state is one of profound confusion, or absorption in centric ideas. Hallucinatory disturbance of several, or all, of the senses is the prominent manifestation. There is also excessive motor disturbance—the patient is in constant motion—and there is frequently a tendency to gyratory motions. The delusions are those of fear, apprehension, or suspicion, of persons and food, and there is much difficulty in the administration of nourishment. The patient does not usually talk in a loud and demonstrative manner, but in a quiet tone, with little reference to surrounding objects or persons—much like the conversation at one end of a telephone. The total absorption of the mind of the patient in centric ideas, indifference to all surrounding objects, and inability to attract the attention in these and all similar cases, are unfavorable prognostic signs; but when the delusions have reference to and are connected with surrounding objects and persons, the case is more hopeful. The pulse shows a wide range, as from 100 to 120 and 140 in a brief interval of time. The temperature reaches 104°, or even 106°, usually 100° to 102°.

There are also distinct remissions, like lucid intervals of a few hours' duration, in which the patient seems for the time rational, and the pulse and other conditions resume a normal state. Possibly, but certainly rarely, the disease may suddenly end in this manner. If, however, there are exacerbations and remissions of all of the symptoms, if there are profound delirium and insomnia, if the attention cannot be roused, if the several senses are more or less involved, if there is great motor disturbance, if, at short intervals, there is a great variation of the pulse, if the fingers tend to the palms, the prognosis is decidedly unfavorable. Death may take place in two or three days; but if life can be preserved for from ten days to two weeks, the stage of acute delirium subsides, but the maniacal stage continues, with chances that in one or two months recovery will take place. It is the general experience that when death does not occur in the early stage recovery follows rapidly and completely, and without a stage of succeeding dementia.

The probabilities in a case of acute delirium, or acute delirious mania, are against recovery, and this fact should be borne in mind if the question comes up whether the patient should at once be sent to a hospital, or whether there should be a delay of a few days. Undoubtedly the mortality from this disease was formerly greater than now. The rapid waste of tissues, the dry tongue, the sordes on the teeth, and the general asthenic condition, are more promptly met now by a liberal administration of food and stimulants. Then, again, the new hypnotics can

be used safely and effectively, without the necessity of administering drugs, that sometimes do more harm than good by intensifying the delirious condition, and developing a new pathological state. I have seen hyoscine produce sleep, and quiet the excessive restlessness and struggling characteristic of this disease.

In the progress of the disease there will be observed a tendency to sluggish circulation—a stasis of the capillary circulation. This is a symptom of serious import, indicating the extent to which the vasomotor system is involved. It is important to be able to combat a tendency which is a precursor of a fatal termination. I have in three cases seen this condition removed by packing the patient in hot wet sheets. In each case the supposed hyperæmia of the brain seemed to be relieved, the general circulation was improved, there was diaphoresis and a free discharge of urine.

In our present state of knowledge, anything that may be said of the pathology of a disease that leaves no appreciable traces is partly speculation. The cases of this disease furnish a history of strain from overwork, worry and anxiety, shock, or of some profound emotional disturbance at some period, such as may produce an arrest, alteration, or disorder of nervous nutrition. As the deficient nutrition of the nervous mass and the asthenia and collapse which characterize these cases are due to a deterioration of the quality of the blood, and to the state of the cerebral circulation, the state of the patient, as we observe him, is that of mental and physical incoördination. There are successive explosions of psychic and physical force, such as may be supposed to arise from the suspension and disorder of the inhibitory functions. As the tendency is to death from asthenia, the indication for treatment from this point of view is to support the patient during the existing paroxysm, and the prolonged use of tonics and rest during and after convalescence.

A CASE OF ACUTE DELIRIUM.

BY M. G. TULL, M.D.,
OF PHILADELPHIA.

THE patient, Charles P., aged thirty-nine years, was a farmer until eight years ago; since then has managed a switch-board in the tower of the Philadelphia, Wilmington and Baltimore Railroad, at Gray's Ferry Station, and at the same time carried on a grain and grocery business. When nine years old, he fell from an ox-cart, which caused bleeding from the left ear for one day, and the ear remained permanently deaf. His subsequent history was that of unvarying health. In appearance he was a man of typically fine physique.

On August 16th he spent the day at Atlantic City, where he stayed in the water for four hours.

On August 24th, at 6 A. M., I was called to see him. I found him tossing to and fro on the bed, flinging his arms about, and with a vacant expression of the eyes. His only symptom of distress was a constant tendency to move his hands toward the bladder. He was apparently semi-conscious. Thinking that the condition might result from retention of urine I catheterized him, and found the urine normal in color, odor, and quantity. I carefully examined for albumin, with negative results. In fact, I could find no evidences of organic disease, and was at a loss for a diagnosis. This condition continuing during the morning, I suggested a consultation with Dr. J. Hendrie Lloyd in the afternoon. Dr. Lloyd pronounced the symptoms hysteroidal mania, and he also could find no evidence of organic disease. The pulse during this time varied from 75 to 88, the temperature from 100° to 101°. His skin was very dry. I had given $\frac{1}{4}$ grain of morphine with $\frac{1}{60}$ grain of atropine hypodermically to control restlessness. I then employed steam-baths, and pilocarpine both hypodermically and by the mouth. After the steam-bath was continued for two and a half hours his skin became moist. The condition of the patient continuing unrelieved, in deference to the apparent wishes of the family, who were convinced that there was some ear-trouble, because previously to the attack he had complained of pain about the right side of the head, I requested Dr. J. B. Deaver to see the case. He joined Dr. Lloyd and myself in consultation, Sunday night, August 24th. We agreed that the symptoms were simply maniacal, and that there were no evidences of organic disease.

On Monday, August 25th, the same conditions persisted, except that the patient seemed more conscious. Between the paroxysms he was able to sit on the bed and urinate, but he passed very little urine and with great difficulty. His temperature varied from 100° to 103°, and pulse from 75 to 88, his respiration averaging 24. During this whole period the conjunctival reflexes were present, and his attention could be partly fixed by a quiet, determined effort. On Monday, at 11 A.M., Dr. Lloyd again saw him with me, and considered that the diagnosis of non-organic disease was confirmed. We again put him on opium and small doses of belladonna by the rectum. During Monday night, August 25th, the patient rapidly became worse. I was sent for at 6 o'clock A.M., when I found him dying, his pulse having increased to 105, and his temperature to $103\frac{2}{5}$°. At 8 A.M., August 26th, he died.

That afternoon the autopsy, kindly conducted by Dr. J. A. Davis, assisted by Dr. Brinkman, in the presence of Dr. Lloyd and myself, revealed a condition apparently of incipient meningitis. The temporal bone was not diseased.

After the man's death I was informed by his neighbors that his temper had seemed decidedly more irritable and aggressive than usual for some time past, and that he had been working eighteen hours daily.

ON THE RELATION OF ECZEMA TO DISTURBANCES OF THE NERVOUS SYSTEM.[1]

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No careful medical observer or thoughtful student of medicine can rightly doubt or ignore the part which the nervous system plays in relation to many diseases of the skin, although the exact connection and causal relations between nerve-disease and skin lesions may not always be apparent or satisfactorily explained. The intimate association of certain skin affections with, and their dependence upon nervous elements have passed beyond the basis of personal judgment and experience, and rest upon sound anatomical, pathological, and clinical grounds, which are being confirmed and strengthened daily.

Time and space fail us to detail here the proofs of this statement, most of which are more or less familiar to all; the careful and thorough writings of the many observers to be mentioned later on are full of demonstrations of the neuro-pathology of various diseases of the skin, and the present writer has on several occasions elaborated the subject, giving clinical illustrations of the same.[2]

It suffices, therefore, for our present purpose to accept the fact that the nutrition of the skin and of the cells composing its structure is under direct nervous control, so that under proper nerve-influence the processes of health are carried on, while under perverted nerve-action many pathological changes may take place in the skin, as well as in other tissues.

Fully accepting this basis of a possible neuro-pathology of lesions in the skin, it remains for us to study how far clinical and pathological facts point toward this element of causation for the eruption, phases of eruption, or disease to which the name of eczema is given.

In approaching the subject of the relation of eczema to disturbances of the nervous system, the questions naturally arise: What is eczema? What is it that constitutes the disease under consideration? What is it that determines that the skin lesions seen in any particular individual are eczema, and not some other affection? What are the real essence and nature of the disease? Is it purely a skin affection, consisting of certain changes in the cutaneous tissue, from many causes, or is there some underlying condition, habit, or state of the system, which determines the pretty uniform set of cutaneous symptoms which we call eczema? It would seem that these questions should be definitely answered before we could make any great progress in a study of the disease or its treatment, and it is hoped that the present discussion may aid somewhat in their solution. But everyone familiar with dermatological literature knows that they have been the theme of countless discussions, and that widely-divergent opinions have been expressed by those of large experience in the disease in all countries, so that even to-day there is no universally accepted view as to the ultimate nature of eczema.

It would be out of place to enter here at all fully into the discussion of these topics, or to consider at length the morbid conditions of the skin to be included as eczema, but a few words must be allowed in order to understand rightly the basis of our study.

We know and recognize eczema by its cutaneous phenomena, for it cannot be said that it has any other absolute symptoms than those found upon the skin. But still, polymorphous and *bizarre* as those appearances upon the skin often are, simulating at times many other quite different cutaneous affections, there is a group of symptoms which are universally recognized as belonging to eczema, and of a thousand cases so named by a competent dermatologist, the diagnosis of very few would be questioned by others similarly qualified. A brief definition which would cover every case of eczema, or a short description of its forms and phases as seen in persons of various ages and on different parts of the body, would be very difficult to give; and, after all, it is only the composite picture, including many features belonging equally to other affections, that we designate as eczema.

But, in connection with various cases of eczema, we often meet with other phenomena also than those upon the skin—that is, we find disturbances or disease of other organs of the body, which we learn by clinical observation to associate more or less closely with the disease under consideration, and which are found by experience to be of importance etiologically. These, furthermore, are seen to improve or disappear with the hygienic and general treatment or measures directed to the eruption, and yet none of them can be called absolute symptoms of the disease, or essential features of the eczema. The elements referred to are such as anæmia, lithæmia, the strumous or gouty habits or conditions, high arterial tension, and also various derangements of

[1] Prepared by special request, to open a discussion on eczema at the Tenth International Medical Congress, Berlin, 1890.

[2] The Relations of the Nervous System to Diseases of the Skin, Archives of Electrology and Neurology, New York, November, 1874, and May, 1875.

Two Cases of Exophthalmic Goitre and Chronic Urticaria, etc., Chicago Journal of Nervous and Mental Diseases, October, 1875.

A Clinical Study on Herpes Zoster, American Journal of the Medical Sciences, July, 1876.

Herpes Gestationis, etc., American Journal of Obstetrics, February, 1874.

Clinical Notes on Pruritus, Journal of Cutaneous and Genito-Urinary Diseases, 1887.

Alopecia Areata, Medical Record, 1889.

other organs, mainly the digestive tract, liver, and kidneys, together with certain *nervous phenomena;* all these may be well- or ill-defined, and may either obtrude themselves or be discovered only after close investigation.

As remarked before, none of these elements have been proven to belong properly and absolutely to eczema, but still from accumulated clinical experience they must, singly or combined, be considered factors in the production of the disease. If, however, we are pressed to a single answer as to the real nature of the disease, we are obliged to state that we as yet know very little in regard to the true and fundamental cause of eczema: why one person should have it when another individual escapes, who is apparently in the same or worse condition in respect to the derangements of health mentioned, cannot be explained.

The real reason, however, possibly lies in the local condition or constitution of the skin itself, which renders it liable to take on this peculiar form of inflammatory action, either upon the application of external irritants, or from neurotic or other derangement of its nutrition from within. To this condition or state of the individual in whom these changes are likely to take place, under the same or other causes, we apply the term *eczematous*, without indicating thereby any exact or particular disease or known alteration of the system, simply for the reason that we do not know what that is.

I think, therefore, that in studying the relation of eczema to disturbances of the nervous system, or its relation to any other derangements, functional or organic, of any portion of the economy, or in considering the effects of local agents in producing the eruption, we should be very careful to discriminate between predisposing and exciting causes, and give due weight to each: *post hoc ergo propter hoc* is a very seductive and dangerous form of reasoning in medicine, but one which is often unconsciously, or sometimes ignorantly, applied.

Thus, when we see an eruption, which we call eczema, apparently follow or depend upon some nervous disturbance, we should carefully consider (1) if, possibly, it may be only a coincidence; or (2) that the two may depend upon one common cause; or (3) that the nerve-disturbance may have excited the eruption in one previously predisposed thereto; or (4) that the effect of the former may be very remote, putting in action a train of systemic changes which may end in inducing the eruption. In none of these instances could we properly speak of the nerve disorder as the cause of the disease. Even when the eruption seems to follow pretty directly upon some severe nerve strain, shock, injury, or disease, much caution should be exercised in ascribing an immediate causative connection, for how rarely do we find these conditions followed by the development of eczema; and, on the other hand, how very few of the multitudes who suffer from eczema ever exhibit any causative elements pointing toward the nervous system. To my mind the proof is infinitely stronger in regard to many other of the internal and general causative elements mentioned, and in a far larger proportion of cases, than is that regarding the connection of eczema with disorders of the nervous system.

But still, while it is thus urged that caution is necessary before accepting any etiological relationship between eczema and nervous disturbances, it must yet be granted that the weight of evidence is very strong in favor of such relationship to a greater or less extent in certain cases, and that possibly, as our thought is turned in this direction, it may become even more evident than it is at present; and certainly it is wise to regard the neurotic aspect of many cases of eczema in connection with the therapeutics of individual patients.

There is one clinical feature or symptom in eczema which would seem to point to a neurotic element in the disease, even to the most superficial observer, namely, the itching, without which the disease may hardly be said to exist. Not only is the sensation of pruritus a common and severe symptom when the eruption is pronounced, but even before any amouut of lesions are appreciable on the skin, and often long after they have ceased to be prominent, the itching may prove most distressing; and all recognize that scratching to relieve itching is a most prolific cause of the development and increase of the eruption. How far the itching is a primary feature, and how far it results from pressure upon nerve filaments by effused fluid or swollen cells, it is impossible to state; it is certain, however, clinically, that in an acutely-developing vesicular eczema there is much relief from the itching when the fluid reaches the surface, either spontaneously, or by artificial aid; on the other hand, some of the most distressing and inveterate pruritus is found in certain cases of erythematous eczema about the face, where there is but little infiltration of tissue. This latter form is very apt to occur in elderly persons, and in those nervously broken down.

For many years writers have recognized, to a greater or less extent, the dependence of certain cases of eczema upon nerve-disturbance or disease, and in addition to the generalized statements found in text-books to this effect, there are a considerable number of recorded observations in different countries which tend to show the clinical and pathological soundness of this view. It will be our endeavor to classify these observations, and to present, as briefly as possible, such evidence as seems of special interest.

There are so many points to be considered in

studying the influence of the nervous system in the production of eczema, that it is by no means easy to weigh the relative effect of the various nerve lesions or disorders which have been reported in this connection, nor to distinguish clearly the real mode in which the deranged neurotic element operates; at present much relating to the subject is mere conjecture, waiting for verification or refutation with the light of advancing science. But as all work can be best carried on when there is a skeleton basis on which to arrange proof, we may attempt to construct a scheme about which clinical and pathological observation and research may build as opportunity offers.

With this view, and with the material at hand, we will consider the relations of eczema to disturbances of the nervous system under the following heads:

1. Anatomical, physiological, and pathological grounds for such a relationship; and

2. Clinical grounds, based on recorded observations.

1. *The anatomical and physiological grounds* for a nerve-relationship in eczema need not detain us long. All are familiar with the very abundant nerve-supply of the skin, and with its distribution even among and into the cells of the rete Malpighii, and into the cells composing the glands of the skin, and that nerve-fibres are very freely supplied even to the hair-follicles and lymph-spaces, as shown especially by Arnstein.[1]

The influence of the vasomotor nerves, both in the normal regulation of the blood-supply and nutrition, and also in the production of morbid states, is now so well recognized both in regard to the skin and other organs that it needs but to be mentioned.

We are also well aware of the control which the sympathetic system exercises over various processes of the body, healthy and morbid, including the skin and its glands, as has been so carefully elaborated by Eulenberg and Guttman,[2] E. Long Fox,[3] and others. The neurotic aspects of many skin affections have also been admirably worked up of late years by Rendu,[4] Testut,[5] Leloir,[6] Schwimmer,[7] and others,[8] so that now there is no reason to doubt that from anatomical and physiological grounds changes may take place in the skin through the medium of the nervous system.

The direct anatomico-pathological grounds for recognizing a nerve origin of eczema have unfortunately been studied but little, and the subject offers a promising field for future research. The condition of the nerves in the affected skin in acute and chronic eczema, also the state of the conducting nerves and of the cord, likewise that of the sympathetic nerves and ganglia, have thus far been hardly at all studied. The much-quoted observations of Colomiatti[1] are almost our sole basis of knowledge regarding the condition of the cutaneous nerve filaments in eczema. It will be remembered that in a number of cases of eczema, mainly of the papulo-squamous type, he reports finding material changes in the cutaneous nerves, while in cases which had been partially or wholly cured, he claimed that the nerve-tubes had been to a large part restored to health; but he was unable to observe the various changes of regeneration. Leloir[2] states that in two cases of eczema in which he examined the nerves, he found both the nerve-filaments and their sheaths normal; but in a later communication[3] he says that he has verified the observations of Colomiatti.

2. *The clinical grounds* for the assumption of a relationship between eczema and disturbances of the nervous system are much more full and interesting, and have been dwelt upon by many observers.

We may divide our study of this portion of our subject into five general heads, considering eczema as it is related to

1. Neurasthenia or nerve-exhaustion.
2. Nervous and mental shock.
3. Reflex phenomena: (*a*) of internal origin; (*b*) peripheral.
4. Neuroses: (*a*) structural; (*b*) functional.
5. Encephalopathy and myelopathy.

1. NEURASTHENIA OR NERVE-EXHAUSTION.

Neurasthenia, or general nervous exhaustion or depression, must be placed first in the list of neurotic conditions associated with or causative of eczema, since in this is found a predisposing element in very many cases of the disease; moreover, it undoubtedly

[1] Arnstein: Sitz. der k. Akad. der Wissensch., Bd. lxxiv., Oct. 1876.

[2] Eulenberg and Guttman: Die pathol. des Sympatheticus. Berlin, 1873.

[3] Fox: The Influence of the Sympathetic on Disease. London, 1885.

[4] Rendu, Annales de Dermat. et de Syph., vol. v., 1873, p. 412.

[5] Testut: De la Symétrie dans les Affect. de la Peau. Paris, 1877.

[6] Leloir: Recherches clin. et anat.-path. sur les Aff. cutan., etc. Paris, 1882.

[7] Schwimmer: Die Neuropathischen Dermatosen. Wien, 1883.

[8] Thèses:

Triesch: Ueber den Einfluss der Nervensyst. auf Erkr. der Haut. Marburg, 1872.

Hageman: Ueber den Einfluss der vasom. Nerven auf die Hautk. Halle, 1874.

Koster: Die Hautk. und ihre Beziehungen zum Nervensys. Halle, 1876.

Witzel: Ueber den nervösen Char. des Ekzems, etc. Berlin, 1879.

Czempin: Die Theorien über den Einfl. des Nervens. auf d. Ent. der Hautk. Berlin, 1884.

[1] Colomiatti: Gior. Ital. delle Mal. Ven. e della Pelle, 1879.

[2] Loc. cit., p. 164.

[3] Annales de Dermat. et de Syph., 1890, p. 475.

lies at the bottom of many instances in which other nervous conditions act as the exciting cause of the eruption, as will be mentioned later on.

While this term neurasthenia is somewhat indefinite, and as a disorder it may be said to have no pathology, yet practically the condition does exist, especially in America; furthermore, a general nerve-exhaustion, from many causes and taking many shapes, is not infrequently found in a certain class of eczema patients, and does, to all appearances at least, have much to do with the genesis and continuance, or recurrence, of the eruption in many cases.

Clinical proof of this could be furnished in abundance, and numberless cases could be detailed in which eczema, more or less severe and general in character, followed directly upon prolonged nervous strain, such as long attendance upon the sick, distressing or exhausting work of any kind, sleepless nights from worry or anxiety, etc. A few illustrative cases, some of which have already been mentioned in print, by the present writer, may be briefly alluded to:

An unmarried lady, aged fifty-three years, was the executive officer of a charitable institution, and her duties were arduous and exacting. On Tuesday of each week she was particularly tried on account of the weekly meeting and inspection of a board of lady visitors, and that night was often sleepless. Her eczema of the face and hands was always aggravated on the succeeding morning; indeed, the eruption which would often yield very satisfactorily to treatment during the week, would burst out afresh on the Wednesday morning succeeding the visit. This had been the case for some months before I saw her, and was verified by myself again and again.

A prominent clergyman, aged fifty-two years, had for many years an eczema of the head and face, which was always greatly aggravated on Monday after the Sabbath's mental work and strain. This I myself observed on a number of occasions. The same occurred sometimes during the week, whenever extra work, such as a public address, was called for.

In another case, that of a lady, aged twenty-two years, any nervous excitement or household disturbance and hysterical crying would be followed by a fresh outburst of eczema of the hands.

In numbers of instances I have seen business or legal worry followed shortly by eczema. Mentioning the matter to an exceedingly intelligent gentleman, now aged forty-two years, whom I have seen off and on with eczema for ten years, he remarked on the truth of the observation, and said: "You may quote me as a striking illustration of the effect of nervous strain in producing eczema again and again."

Some knowledge in regard to the effect of nervous strain in the production of eczema may be learned, I think, from a study of the statistics of cases, especially in private practice. In the accompanying tables—I. and II.—are given the sex and age of 5000 cases of eczema under my personal observation, arranged in semi-decades, but time permits only one or two points to be noticed. It will be seen that about one-half of the cases were in males—nearly 54 per cent.; but if the tables be examined more closely, it will be found that among the private patients the males formed a much larger proportion, namely, almost 59 per cent. If now we analyze this more closely, we find that during the period of manhood, from thirty to fifty years of age, when the greatest strain of life comes on men, the number of males in private practice is about double that of females.

TABLE I.

TABLE OF PUBLIC AND PRIVATE ECZEMA CASES.

AGE.	PRIVATE.			PUBLIC.			
	Male.	Female.	Total.	Male	Female	Total.	Grand total.
6 mos. and under	48	32	80	65	62	127	207
6 mos. to 1 year	35	13	48	56	42	98	146
1 year to 2 years	30	30	60	91	47	138	198
2 " 3 "	26	21	47	69	51	120	167
3 " 4 "	11	17	28	49	58	107	135
4 " 5 "	7	10	17	44	18	62	79
5 " 10 "	36	42	78	108	111	219	297
10 " 15 "	22	47	69	53	82	135	204
15 " 20 "	41	73	114	76	102	178	292
20 " 25 "	62	86	148	119	127	246	394
25 " 30 "	92	96	188	135	112	247	435
30 " 35 "	129	66	195	116	84	202	397
35 " 40 "	135	69	204	104	119	223	427
40 " 45 "	124	63	187	76	107	183	370
45 " 50 "	113	67	180	76	121	197	377
50 " 55 "	97	54	151	94	108	202	353
55 " 60 "	90	41	131	64	69	133	264
60 " 65 "	67	31	98	52	49	101	199
65 " 70 "	48	14	62	39	31	70	132
70 " 75 "	34	11	45	31	13	44	89
75 " 80 "	16	6	22	8	5	13	35
80 " 85 "	4	4	8	1	2	3	11
85 " 90 "	2	2	4	...	1	1	5
90 and more	2	...	2	1	...	1	3
	1271	895	2166	1527	1523	3050	5216

Looking now at the column relating to male patients in private practice, we find that between ten and twenty years of age there were but 63 cases, whereas, in the next decade there were 154 cases, or about two and one-half times as many; while during the next decade, that between thirty and forty years of age, there were no less than 264 cases, or more than four times as many cases as during the developmental period—from ten to twenty years—before the cares of life begin to weigh heavily on man. The next decade, that between forty and fifty years, shows also a large number, namely, 237 cases. Thus, between the ages of thirty and fifty, when the nervous strain of life comes most on men, the disease is enormously increased, there being no less than 501

cases, or nearly 40 per cent. of all the instances of eczema in males, in private practice, during this period.

The increased proportion of cases of eczema in males during this period is also forcibly shown in Table II., where the proportion of eczema cases to living people is shown in periods of five years each. Here we see that while the percentage of persons living between the ages of twenty-five and thirty years is only 7.5, the proportion of the eczema cases occurring during this five years is 8.3, and the increased ratio is shown in each semi-decade up to sixty years of age.

TABLE II.

COMPARISON OF PERCENTAGE OF ECZEMA PATIENTS AT DIFFERENT AGES WITH THE PERCENTAGE OF INDIVIDUALS ALIVE AT THOSE AGES, AS SHOWN BY THE CENSUS.

Ages.	Per cent. of ages of all persons.	Per cent. of eczema patients.	Relation between the two.
Under 1 year	2.2	6.7	+
1 to 2 years	2.0	3.8	+
2 " 3 "	1.9	3.2	+
3 " 4 "	1.8	2.6	+
4 " 5 "	1.8	1.5	—
5 " 10 "	8.7	5.7	—
10 " 15 "	8.4	3.9	—
15 " 20 "	8.2	5 6	—
20 " 25 "	7.9	7.6	—
25 " 30 "	7.5	8.3	+
30 " 35 "	7.2	7.6	+
35 " 40 "	6.7	8.2	+
40 " 45 "	6.3	7.1	+
45 " 50 "	5.9	7.2	+
50 " 55 "	5.4	6.8	+
55 " 60 "	4.8	5.1	+
60 " 65 "	4.1	3.8	—
65 " 70 "	3.3	2.5	—
70 " 75 "	2 4	1.7	—
75 " 80 "	1.5	0.67	—
80 " 85 "	0.7	0.21	—
85 " 90 "	0.2	0.1	—
90 and over	0.07	0.056	—

Exactly how this nerve-strain and nerve-exhaustion operate to induce eczema cannot now be stated with certainty, but, clinically, the fact appears very certain when cases are studied with sufficient exactness. This view is also supported by many writers, and finds corroboration in such expressions as the "nervous debility" of Wilson, and "faulty innervation" of Hebra, Tilbury Fox, and others. It is interesting to note that the elder Hebra[1] expressed himself convinced that "faulty innervation played the principal *rôle* in the production of eczema"; although now so often quoted as a localist, he recognized the internal and general causation of many skin-affections to a much greater extent than is commonly believed. Nikolski[2] has recently reported some cases illustrating the neurotic origin of eczema.

Finally, the therapeutic measures which are of service in many cases of eczema point strongly to a general neurotic causation. Arsenic, strychnine, quinine, preparations of phosphorus and iron, cod-liver oil, and other remedies which are of use in neurotic states, form the basis of much of the internal treatment of eczema; ergot also, as especially shown by Witzel,[1] often proves very valuable, acting, as it is claimed, through the vasomotor nervous system. Electricity likewise, in the form of general galvanization, has been reported on favorably by Beard,[2] Fitch,[3] Morton,[4] Eloy,[5] and others. It is quite possible, also, as suggested by Tilbury Fox,[6] that the beneficial effect of sedative local measures, used early in acute eczema, may be ascribed in part, at least, to a reflex neurotic action.

(To be concluded.)

[1] Hebra: Lehrb. der Hautkrankheiten, Erlangen, 1879, vol. i. p. 763.

[2] Nikolski: Quoted in Viertelj. für Derm. und Syph., vol. xix. p. 1020, 1887.

[1] Witzel: Loc. cit.

[2] Beard: Archives of Dermatology, New York, 1875, p. 325.

[3] Fitch: Ibid., New York, 1875, p. 55.

[4] Morton: New York Medical Record, April 5, 1879, p. 331.

[5] Eloy: l'Union Méd., September 13, 1883; Journ. Cutan. and Ven. Dis, 1884, p. 58.

[6] Fox: Journ. Cutan. Med., iv. p. 170.

A NEW MODE OF EXHIBITING SULPHONAL.

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UNQUESTIONABLY the great disadvantage of sulphonal over other recently-introduced hypnotics is its insolubility and consequent slowness of action. As ordinarily administered, dry upon the tongue, or suspended in mucilage, etc., the result, in most cases, is unsatisfactory. Even after a decided dose hours often elapse before sleep is obtained, and, usually, a condition of very annoying semi-somnolence is maintained throughout the greater part of the subsequent day. Unpleasant effects of this sort are so frequent that many physicians are deterred from prescribing what has proved in my hands the most satisfactory of the newer hypnotics. These effects obtain because of the very slow diffusion of the drug when taken in a state of simple suspension, the whole amount not entering the circulation for many hours after its ingestion.

I desire to call attention to a more satisfactory mode of administering sulphonal; a method that occurred to me when having occasion to take the drug a year or more ago, and one which has subsequently afforded me results in practice not in the least obtainable by its use in the common way. My method is as follows: I direct that just before retiring the sulphonal powder be well stirred in a

glass two-thirds full of boiling water (about six fluid-ounces) until entirely dissolved. The water must be boiling, and to insure that it is at the boiling-point when brought in contact with the sulphonal, it had better be heated on the spot. It can be boiled in a tin-cup over the gas, or over a spirit-lamp. After the sulphonal has entered into solution, which will occur in a moment or two if it be well-stirred, cold water may be very cautiously added to reduce the liquid to a drinkable temperature, which, if the patient is accustomed to taking hot fluids, *will be one not sufficient to cause the slightest precipitation of the drug;* or the hot solution of sulphonal may be permitted to cool to this temperature, the cooling process being facilitated by continued stirring. To insure success the sulphonal must be taken *wholly dissolved*, and the hotter the solution is drunk the better. It is surprising to one accustomed to prescribing this hypnotic in suspension several hours before bed-time, to allow for what has been called the period of therapeutic incubation, to note the prompt and satisfactory result of this simple manœuvre. The hot solution dilates the gastric vessels and stimulates them to rapid absorption, so that diffusion takes place from the stomach probably before slight or any precipitation of the drug occurs; entirely unlike the result that follows when the sulphonal is ingested in a state of simple suspension. In the latter case gastric absorption can scarcely occur, and hours are perhaps consumed before the whole amount taken enters the blood. The period of therapeutic incubation is practically done away with. Sleep results in most cases in a very few moments, and seems to be more profound and dreamless than that from a larger dose taken in the ordinary way, and the annoying condition of drowiness usually present on the subsequent day is scarcely felt if the dose be properly graduated. The hot solution, which has a slightly unpleasant taste from the dissolved sulphonal, may be rendered decidedly palatable by the addition of a tablespoonful of some such *liqueur* as *crême de menthe* ("green mint"), which, apart from its efficiency in this direction, will probably tend to promote still more rapid absorption of the drug. To obtain an immediate and altogether satisfactory result from this method it is desirable that the stomach be empty or at least comparatively free from food, so that precipitation be not favored and absorption delayed by the entanglement of particles of sulphonal and undigested food, but as it is unnecessary to take the dose until the retiring hour there will usually be no difficulty from this.

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Obituary.—John Marshall, F.R.C.S., F.R.S., LL.D., the well known English author, anatomist, and physiologist, died January 3, 1891, in London, aged seventy-three years. His death was due to acute bronchitis.

AN EXPERIMENTAL AND CLINICAL STUDY OF ERGOT.[1]

BY JOHN C. HEMMETER, PH. D., M.D.,
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PART I. *Experimental.*—Our knowledge of the physiological action and therapeutic application of such a complex drug as ergot, must be based upon a perception of relations. In no department of experimental therapeutics do we meet with such manifold and contradictory results, or with more widely-digressing theories than those concerning the action of ergot. This is especially true in the investigations that have hitherto been made relating to the nature and cause of the contraction of the pregnant and non-pregnant uterus, which is produced by this drug. Up to the present time it has not been established whether the action of ergot in this case is a peripheral or central one; that is, whether ergot acts by innervating the uterus through the spinal cord, or directly on the muscular fibre of the organ.

H. C. Wood, in the last edition of his *Treatise on Therapeutics*, admits the uncertainty, but thinks that the drift of present evidence is toward peripheral action. The only evidence which he quotes to base this view upon is that of Boreischal,[2] who in several experiments succeeded in producing violent contractions of the uterus after dividing all of the nervous connections of the organ. Opposed to these results we find those of A. Wernich,[3] who found that no contractions of the unimpregnated womb were produced by ergot after section of the spinal cord. Wernich made only two experiments to decide the point, and any possible force his result might have is destroyed by the fact that he himself does not attribute much importance to it, because the death of his animal took place immediately after the experiment as a result of the operation.

T. Lauder Brunton, in his *Pharmacology and Therapeutics* (1885), intimates that ergot possibly acts like ammonia—producing contraction of the uterus after all nervous connections have been divided—but on the whole gives no experimental evidence for deciding the point in question.

Rosenbach[4] is inclined to accept a direct and local action of ergot upon the muscular tissue of the uterus, indirectly causing contraction by bringing on acute anæmia of the organ.[5] C. Binz holds that as long as we have no better proofs than the present, to believe the opposite we must accept (mainly from clinical observations) that ergot

[1] Experiments were made in the Biological Laboratory of Johns Hopkins University, Baltimore.

[2] Loc. cit., p. 548.

[3] Virchow's Archiv, 1872, B. lvi. S. 510.

[4] Arzneimittellehre.

[5] Pharmakolog. Untersuchungen, Wurzburg, 1879, Bd. iii. S. 78.

directly acts upon the uterus in producing contraction, and not by innervation through the spinal cord.[1] Röhrig,[2] again, is directly opposed to this opinion.

These contradictory statements may be partly explained by the fact that the uteri of different animals vary greatly with regard to their irritability and to the manner in which they respond to stimulations by general contractions.

The uterus of the dog and the cat is not very irritable, and responds only to very strong stimulations, and even then rarely by general contraction. The uterus of the rabbit, however, is very irritable, and at times exhibits spontaneous contractions when no direct stimulus has been employed. Secondary circumstances, such as manipulation incident to the vivisection, opening of the abdominal cavity, and the mere access of the air to the organ are sufficient to cause it to contract. These contractions soon come to a close and then the uterus lies perfectly at rest. It is in these periods of rest that the experiments with stimulation should be undertaken. Schlesinger[3] has called attention to the availability of virgin rabbits for these investigations. In these animals one generally finds the womb completely at rest though responding promptly to applied stimuli. It is not difficult to distinguish the uterus of a virgin animal from one which has borne young. In nine out of the twelve experiments which I made concerning this subject, I made use of so-called virgin rabbits.

The contraction-waves of the uterus generally pass over the muscular layers of the organ in a definite direction; as a rule, they begin as regular peristaltic movements at the abdominal end of the tubes and horns and radiate toward the os, or in rare instances beginning as antiperistaltic movements at the os, they progress over the body of the uterus, shortening it considerably, and run out toward the tubular end of the horns. In addition to these general peristaltic movements, one can notice after circumscribed irritation of the organ, certain local, more or less sharply-defined, circular contractive narrowings or constrictions, which Röhrig, I think, has designated as strictures; these may progress outward over the horns in alternating directions. Finally, by constant increase of the stimulation, the peristaltic contractions as well as the strictures may pass into spasmodic or tetanic contractions under which the uterus may assume an almost erect position. Some of the animals upon which I experimented were pregnant; the uterine contractions in these cases were very intense and lasted from one hour to an hour and a half (whilst in non-pregnant animals they cease in from three to six minutes) when the uterus fell into a state of repose. These periods of repose must always be waited for, before any experiments with stimulation can be undertaken.

A part of the discrepancies in the opinion of the investigators mentioned might be explained by the fact that the quality and efficacy of ergot and of its preparations obtainable in pharmacies vary greatly. This is a misleading circumstance, both in practice and in the laboratory, because no definite chemical tests are known which can be used to establish the therapeutic value of a given sample. In a large number of therapeutic substances we are enabled to test their value by simply determining in them the percentage of definite, crystallizable alkaloids or other principles upon which the therapeutic action of the drugs chiefly depends. In ergot the case is different. Its constituents are numerous, and judging by the widely-differing and often contradictory results obtained by different investigators, are at best, not well defined. This is most likely due to the fact that nearly all the constituents are uncrystallizable, and hence are very difficult to separate without contamination with other extractives soluble in the same menstruum. Nor does the literature on the subject up to the present day enable us to conclude definitely to which of these rather indefinite organic principles the peculiar therapeutic properties of ergot are due. It seems probable from a study of the results of Buchheim, Dragendorff, Zweifel, and recently of Kobert, that at least three of its constituents are of importance. These are sclerotic acid, which Kobert designates as ergotinic acid, scleromucin, and the cornutin of the latter investigator, who has recently called our attention to a new body in ergot, namely, sphacelinic acid. It is also established that the characteristic physiological effects of the drug are not due to either one of these bodies, but to a combination of them. Thus ergotinic acid produces contraction of the arterioles, but not of the muscular fibres of the uterus. According to Kobert, the constituents which produce contraction of this organ are cornutin and sphacelinic acid,[1] but the whole subject of the active ingredients still remains enveloped in much uncertainty.

As the watery infusion of fresh ergot (this having been used by former investigators) was found to undergo changes very rapidly, I concluded to resort to the fluid extract of ergot, but found this as obtained from various sources very variable, both in physical properties and therapeutic efficacy, some of the specimens having a very offensive odor. In

[1] Vorlesungen über Pharmacologie, Bd. xi. S. 298.

[2] Arch. f. Pathol. Anat., Bd. lxxvi. S. 23.

[3] Uber die Centra der Gefäss und Uterus nerven, Medic. Jahrbücher, 1874, Heft 1.

[1] See also Buchheim, Archiv. f. exper. Path. u. Pharmak, 1874, Bd. iii. S. 1. Zweifel, ibid. Bd. iv. S. 387, and Dragendorff u. Podwissotzky, ibid. Bd. vi. S. 153.

two German preparations of ergotin and one liquid ergotin prepared in Basle, Switzerland, and specially recommended by the manufacturer for hypodermic use, a very unpleasant fœtid odor reminding of decomposed organic matter was noticeable, and the last-named used hypodermically proved very irritating, causing an abscess in a patient suffering from goitre.

Some of the secondary results in the experiments upon animals, which I shall presently describe, were undoubtedly caused by the impurities of the ergot used. (Emboli in the pulmonary and cardiac circulation.) My attention was at last called to a form of liquid ergotin made in Baltimore by Sharp & Dohme, which gave evidences of being a standard preparation, both in clinical and experimental application. I have had some of this ergot in my possession for nearly ten months (since February 3, 1890). It has deposited no sediment, has a fresh, pure odor, and is very effective. This ergotin solution, which is probably the most concentrated liquid preparation of ergot that can be obtained, has since become known under the name of ergotole, to distinguish it from the numerous and widely-differing preparations sold under the name of ergotin. In the experiments to be described this form of ergot was used, together with two forms of fluid extract of ergot, the officinal containing hydrochloric acid, the other no acid, which, however, were more bulky.

After the injection of 1 c.c. of fluid extract of ergot (about 16 minims), the capillaries and arterioles in the omentum of a large rabbit could be seen to contract within from five to eight minutes, and the uterus showed peristaltic contractions. On the other hand, 0.25 c.c. (4 minims) of the liquid ergotin just described produced the same effect on the arterioles in from two to three minutes (rarely five minutes), and the contractions of the uterus were more active and followed each other with greater rapidity. The ergot in both cases was diluted with the same quantity of distilled water, and injected into the jugular vein in preference to the hypodermic method, as the absorption of solutions of ergot from beneath the skin in animals is very slow. This does not seem to be the case in the human being. The rabbit omentum or mesentery was gently spread over a warm stage, and constantly kept under warm normal salt solution; the microscopical examination was made with a Zeiss objective D, ocular A. The irritation was applied in the form of the constant and also the interrupted current, but chiefly the latter, by making use of an induction coil. The time elapsing between stimulation and contraction was measured by a second metronome and at times by a watch. The electric stimulations referred to were employed to test the state of excitability of the uterus. The objects of the experiments which will now be described were:

1. To determine whether the contractions of the uterus by ergot is of centric or peripheral origin.

2. Whether the peristalsis of the intestines is increased or diminished by ergot. If increased, whether this be due to a centric or peripheral action of ergot.

3. Whether the cause of the contraction of the bloodvessels in the omentum is central or peripheral.

4. Whether ergot produces a rise or a fall of blood-pressure. Whatever change occurs, is it due to an action on the heart and arteries or on the spinal cord.

5. The action of ergot on temperature.

First. We will first take up the question of the centric or peripheral origin of the contractions of the uterus. As both chloroform and ether reduce the peristaltic contractions of the uterus in animals, the rabbits used for this purpose were curarized and given, in some cases, a rectal injection of morphine. The curare must be injected in very small quantities, otherwise it will also affect the uterine contractions.

It was necessary in order to solve this problem to isolate the uterus from all nervous connection and then observe whether it would contract after injecting ergot into the jugular vein. It has been established beyond a doubt by Goltz[1] that the centre for innervation of the uterus is located in the lumbar region of the cord. For after cutting the cord at the first lumbar vertebra in a female dog, nine months old, and allowing the wound to heal, the animal in course of time became pregnant and brought forth normal healthy pups. This experiment proves, it is true, that the lumbar cord is sufficient to innervate all these processes, but not that there are no centres in the cord above the line of the first lumbar vertebra, which may also have some control over pregnancy and parturition. The experiments of Röhrig to which I have referred, show conclusively that stimulation of the upper end of the cord after it has been divided at the first lumbar vertebra (according to Goltz's method) still produces distinct muscular contraction in the uterus. This seems confirmatory of Th. Kömer's results,[2] according to whom the sympathetic nerves which leave the cord at the level of the eleventh and twelfth dorsal vertebræ go to the uterus. This nerve track was, therefore, not cut through in Goltz's experiments, and to isolate the uterus completely from all nervous connections we would have to destroy the cord from the tenth dorsal vertebra down to the sacrum, or cut through all nerves which run from the cord to the organ. We decided

[1] Ueber die Functionen des Lendenmarks des Hundes. Pflüger's Archiv, Bd. viii.

[2] Studien des Physiol. Instituts zu Breslau, Heft 3.

upon destruction of the cord, since intersection of the numerous nerve-fibres going to the uterus is attended with much manipulation and exposure of the abdominal organs, besides being a matter of considerable difficulty. The cord was accordingly destroyed by opening it at the tenth dorsal vertebra and running a white-hot copper wire down through the vertebral canal to the cauda equina. This procedure is not difficult and its immediate results do not injure the vital powers of the animal.

Schlesinger[1] has shown that the venous condition of the blood which is caused by temporary interruption of respiration acts as a stimulant to general contractions of the uterus. Röhrig[2] has confirmed this result, and shown at the same time that the contractions do not occur after the destruction of the cord. Spiegelberg[3] has shown that compression of the aorta, cutting off arterial blood-supply, also, in a few seconds produces contraction of the uterus. This has been confirmed by Röhrig and Schlesinger (*loc. cit.*).

Before destroying the cord in the manner stated, we tested the reaction of the uteri of the rabbits by temporary suspension of respiration, by compression of the aorta, and by electricity. After we had assured ourselves that contractions promptly occurred in from six to ten seconds after respiration was suspended (a rabbit breathes 40 in a minute), and in from ten to twenty-five seconds after compression of the aorta, and immediately following electrical stimulation, ergot was injected into a canula in the jugular vein in the form of 0.25 c.c. (4 minims) of ergotole dissolved in 1 c.c. (16 minims) of defibrinated blood from another rabbit or in the same quantity of normal salt solution. Uterine contractions began to pass gently over the organs four minutes after the injection, gradually becoming more intense. When 0.5 c.c. of ergotole was injected, or 1 c.c. (16 minims) of the fluid extract, the contractions of the uteri became tetanic in from three to five minutes after the injection, and continued to increase in violence for thirty minutes (average), then gradually decreased until they ceased altogether, in from fifty to sixty-three minutes after the first injection. When the contractions had thus passed off, and the uteri resumed a state of complete rest, the movements could be reproduced by a second jugular injection of ergotole. To reproduce the same effect the quantity as a rule had to be doubled; the tetanus then came on sooner, but lasted only twenty minutes, when the effects of the second injection ceased also.

When uterine tetanus is produced by ergot there is no relaxation between the spasms, as in the case of contractions produced by compression of the aorta or by suspension of respiration.

When the physiological effect of ergot had thus been established with a single injection of 4 minims of ergotole, and the organ had resumed a position of rest, the cord was destroyed from the tenth dorsal vertebra down to the cauda equina by means of a hot wire.

A second injection of ergotole (1 c.c. or 16 minims) into the jugular vein produces no contraction of the uterus. The result of a third injection of 32 minims (2 c.c.) of ergotole is also negative. Suspension of respiration and compression of the aorta for one minute each time now exert no effect upon the organ.

Electric stimulation, however, is promptly followed by energetic contractions. Injections into the jugular vein of three-per-cent. solutions of ammonia in defibrinated blood (1 c.c. of three-per-cent. solution in NH_3 in 2 c.c. defibrinated blood) are followed by strong uterine contractions.

The following is a tabulated account of one of the experiments:

October 27, 1890. A large, non-pregnant, albino rabbit is subjected to tracheotomy and curarized. A canula, with a rubber-tube attached to it, is tied into the cardiac end of the jugular vein, the other end of the rubber canula is filled with defibrinated rabbit's blood and clamped. Uterus exposed by abdominal section.

Time.	Kind of irritant or manipulation.	Result.
3.10 P. M.	....	Uterus at rest.
3.12	Faradic stimulation, positive pole on lumbar cord, negative on uterus, distance of coil 80 mm.	Strong contractions immediately.
3.15.30	Compression of aorta.	
3 16	" " "	Strong contractions.
3.17		
3.18	.....	Uterus at rest.
3.18.40	Suspension of respiration.	
3.20	.....	Strong peristaltic waves.
3.20.30	Respiration resumed.	Peristalsis continues.
3.22	.....	Peristalsis ceases.
3.23 30	.....	Uterus at rest.
3.25	Injection 25 c.c. ergotole.	" "
3.26	.....	" "
3.27	.....	" "
3.29	....	Slight undulations over horns.
3.30	.....	Antiperistaltic movements marked.
3.31	.....	General contractions of uterus.
3.33	....	General peristalsis and antiperistalsis occur once in 15 to 20 seconds.
3.34	....	They occur over the entire organ.
3.40	.....	General peristaltic movements occur every ten seconds.

[1] Medicin. Jahrb., 1873, Bd. 1.
[2] Virchow's Archiv, Bd. 76, S. 12.
[3] Zeitschrift für rationelle Medicine, 3 Reihe, Bd. ii.

Time.	Kind of irritant or manipulation.	Result.
3.45	.....	Contractions of intensity occur all over uterus about four times in a minute.
3.50	.....	Contractions less intense, and but two in a minute.
3.52.30	.....	One contraction in a minute.
3.54	....	Uterus at rest.
3.55	.....	" "
3.56	.....	" "
3.57	Injection 5 c.c. ergotole.	" "
3.58	.....	" "
4.0	.....	" "
4.2	.....	Slight waves of contraction along both cornua.
4.3	.....	Contractions over the body of the uterus.
4.5	.....	General peristalsis and antiperistalsis.
4.6	.....	Marked and intense general contractions every 10 seconds.
4.7	.....	Contractions following each other in rapid succession.
4.10	.....	Contractions occur every 15 seconds.
4.15	.....	Muscular spasms about four times a minute.
4.20	.....	Contractions only once in 30 seconds.
4.22	.....	Contractions ceasing.
4.25	....	Uterus at rest.
4.26	.....	" "
4.27	.....	" "
4.28	Destruction of cord from 10th dorsal vertebra.	" "
4.30	Injection 5 c.c. ergotole.	" "
4.35	....	No result; uterus at rest.
4.36	.....	" " " "
4.38	Injection 5 c.c. ergotole.	" " " "
4.40	.....	" " " "
4.45	.....	" " " "
4.48	Stimulation with faradic current.	Immediate and rapid contractions.
4.50	Injection 1 c.c. 3 per. ct. solution of ammonia.	
4.51	....	Forcible antiperistalsis.
5.0	.....	The peristalsis produced by the ammonia lasted for 15 minutes, and continued for 5 minutes after the uterus was cut out of the body.

The foregoing table is an account of one of twelve successful experiments which convince us that (1) injections of from 0.25 c.c. to 0.5 c.c. of ergotole, or of 1 c.c. to 1.5 c.c. fluid extract of secale cornutum, will produce intense uterine contractions if inserted into the jugular vein when the cord is intact; (2) that when the cord is destroyed by a hot wire from the tenth dorsal vertebra downward, the above injections, and even double the quantity, have no effect; (3) that electric stimulation will cause prompt uterine contractions even after destruction of the cord; (4) that injections of 1 c.c. of a three-per-cent. solution of ammonium hydroxide will cause uterine contractions after destruction of the cord.

The conclusion is that ergot in producing contractions of the uterus acts primarily and essentially upon the lumbar cord, *i.e.*, its action in causing peristalsis of the uterus is centric, not peripheral.

In three of the experiments it was plainly shown that compression of the aorta and suspension of respiration do not cause uterine contractions after the cord is destroyed, therefore the action of the changes caused by these procedures are also centric and not peripheral. A three-per-cent. solution of ammonia was injected at the end of each experiment, when ergot no longer produced any contractions after cord destruction, and the prompt peristalsis occurring after the injection of ammonia under these conditions proves its action to be exerted directly upon the uterus and to be peripheral.

Does ergot cause increased intestinal peristalsis by direct local action or by exerting an influence upon the spinal cord?

This question could be conveniently solved together with the preceding one, as the same experimental method was applicable to both inquiries. Suffice it to say that in the twelve experiments upon the action of ergot on the uterus, careful observations were made of the peristalsis of the intestines. There is already much good evidence to show that ergot does cause increased intestinal peristalsis. Mr. Samuel A. Wright,[1] in a series of experiments, found very active peristalsis when ergot had been given by the mouth. Dr. Wernich[2] noticed violent peristaltic movements of the intestines following the injection of ergot. This was observed in rabbits whose abdomens were opened; in some cases, however, even through the uninjured abdominal walls. Wernich's statements have been confirmed by Handelin.[3]

Basch and Mayer[4] have stated that the dyspnœic condition of the blood caused by suspension of respiration stimulates not only uterine but also intestinal peristalsis. We are enabled to confirm this observation and to add that compression of the aorta also increases intestinal peristalsis. This compression was in two cases exerted upon the thoracic aorta to avoid direct mechanical irritation of the intestines. When the abdomen of a healthy rabbit is opened, the intestines being kept under normal salt solution, and allowed to remain undisturbed, peristaltic movements will cease in about from eight to ten minutes. If after this absence of motion is established, 0.5 c.c. of ergotole, or 1 c.c. of fluid extract of ergot, is injected with twice the volume (2 c.c.) of normal salt solution, there is at first no change observable in the intestines, but in from six to eight minutes (about the time the uterus shows signs of contraction) a fine quivering is plainly

[1] Edinburgh Med. and Surg. Journ., Oct. 1839, vol. iii.
[2] Virchow's Archiv, 1872, Bd. lvi. S. 515.
[3] Schmidt's Jahrbücher, Bd. clv.
[4] Quoted by Röhrig, Virchow's Archiv, Bd. lxxv.

noticeable along those parts of the ileum which are most easily visible.

In ten minutes distinct wavy contractions are seen to traverse the ileum and the colon. With a little care it can be proven that lumps of half-digested corn and cabbage are forced along the duodenum. By help of these masses of food it is not difficult to watch the progress of the peristalsis, which continues even after the motions of the uterus cease. In our experience the intestinal peristalsis kept up for forty-eight minutes, or nearly twenty minutes longer than the action of the uterus. When the peristalsis of the intestines caused by the first injection of ergot ceases, it can be reproduced by a second injection, which was generally allowed to run into the jugular vein from a eudiometer. If the cord was destroyed from the tenth dorsal vertebra down to the cauda equina, it was in no case possible to produce intestinal peristalsis by twice or even three times the quantity of ergot which had been previously used. It is justifiable, therefore, to conclude that ergot, in producing intestinal peristalsis, acts directly on the cord and only reflexly upon the intestines, its action in this case, too, being centric, not peripheral.

Contraction of arterioles under ergot.—We have made observations on this subject by microscopical examination of the frog's web and the rabbit's omentum and mesentery.

According to H. C. Wood, as early as 1827 M. Courhant advanced the opinion that ergot produces a spasm of the bloodvessels. In 1870 Dr. C. L. Holmes[1] published some observations on this point, and states that when the bloodvessels in the frog's web are watched under the microscope and the animal is poisoned with ergot, they can be seen to undergo a great contraction. A. Wernich[2] reports that when animals in which the arteries of the thigh, back, pia mater, etc., were laid bare, received full doses of ergot, these arteries could be distinctly seen to undergo decided contractions. Paul Vogt has confirmed these observations, also S. Kersch,[3] Boldt,[4] and Max Muller.[5] Boldt asserts that a wave-like peristalsis ran through the capillaries in ergotized animals. Peton, in 1878, observed in a rabbit's ear a complete change of color, from red to pale, under ergot, and proved that this anæmiation was independent of any influence exerted by the central nervous system. The following observation of Dr. Paul Vogt[6] is very interesting: He states that the dilated vessels of the ear of a rabbit whose cervical ganglion had been extirpated could not be made to contract by the hypodermic injection of ergot. P. Eberty's results[1] agree with those of Vogt. On the other hand, Dr. Holmes[2] asserts that after section of the sympathetic nerve and injection of the ergot, the vessels supplied by the divided nerve can be seen to contract, and Wernich[3] confirms this observation. Vogt's and Eberty's experiments, therefore, point to a centric origin of the contraction of the arteries, and those of Holmes and Wernich to a peripheric action. H. C. Wood[4] has especially investigated this subject, but chiefly with regard to the origin of the rise of arterial pressure, which will be most appropriately be considered under the next heading.

Although we examined the omentums of six of the rabbits on which we had made observations upon the uterus, we made six further experiments on this subject of arterial contraction under ergot. The omentum was constantly kept under a thin, slow current of warm normal salt solution.

As H. C. Wood says, that judging by the eye as to whether a vessel does or does not contract is very unreliable, we made use of the micrometer eyepiece and also of the so-called jury system. In this method the experimenter calls in the help of as many fellow-workers as are available, and directing them to watch with the micrometer a certain network of vessels in the omentum, without letting them see his injection of ergot into the jugular vein, asks them, "Tell me as soon as you notice any difference in the size of those vessels—do they grow larger or smaller?" Of ten observers assisting in this manner nine answered "smaller" within from two to three minutes after 0.5 c.c. of fluid extract of secale cornutum, or 0.25 c.c. of ergotole was injected. The tenth man said he was unable to tell, but thought the vessels remained about the same size.

It is but a fair conclusion in this case that ergot injected into the jugular vein produces contraction of the arterioles and capillaries in the omentum of rabbits with the spinal cord intact. The same study was made on the vessels of the ears of the rabbits, and especially on the web of the frog's foot, with the result that of all the ten observers the answer was the same, to the effect that a contraction had taken place when the ergot was allowed to run into the jugular vein from a eudiometer, but unseen by them. In animals, however, in which the spinal cord had been destroyed from the cervical region to the cauda, the vagi divided and artificial res-

[1] Archives de Physiol., t. iii.

[2] Virchow's Archiv, 1872, Bd. lvi. S. 510.

[3] Unfortunately it was impossible to have access to Dr. Kersch's paper. There is an abstract of it in Schmidt's Jahrbücher, Bd. clx. S. 120.

[4] Schmidt's Jahrbücher, March, 1872.

[5] Berlin. klin. Wochenschrift, 1874, p. 305.

[6] Ibid., 1869, No. xii.

[1] Inaug. Dissert., Halle, 1873.

[2] Loc. cit. [3] Loc. cit.

[4] Phila. Med. Times, vol. iv.

piration set up, no contraction of the arterioles and capillaries was observable after ergot had been injected. Here the vote again stood 9 to 1 in favor of no reduction in the size of the vessels, the same man again declaring that he was not able to decide. This observation was also made upon the ears of the rabbits.

The conclusion is that ergot produces constriction of the arterioles and capillaries in the omentum and ear of rabbits and in the frog's web as long as the cord and the vagi are intact. These being destroyed constriction is no longer produced by the drug; its action in this case is centric, not peripheral.

The following study merits consideration in this connection: By means of a hot wire an inflammatory process was set up in one portion of the omentum. The congestion and infiltration extended around the point of irritation, making an area of inflamed tissue the size of a silver dollar. Whilst this area was under consideration it was steadily spreading and new capillaries seemed to grow out where three minutes before none had been visible. At this stage ergot was injected into the jugular vein of the animal (rabbit). Within three minutes the congestion and hyperæmia were visibly diminishing, and capillaries which we had observed developing, actually disappeared. We presume that there was no real new development of capillaries during the first hyperæmia, but that such as were already present but invisible because of their minute size became apparent from the general congestion, and disappeared again under the arterial contraction and consequent lessening of blood-supply to the capillaries caused by ergot.

Observations like those of Patrick Nicol and J. Mossop,[1] who noted with the ophthalmoscope the contraction of the retinal vessels after the exhibition of ergot in man, are very suggestive and convincing. I have made the same study of the retinæ of two epileptics at Bay View Asylum. The diminution of the calibre of the vessels under ergot was very apparent. It is not a reliable method, to judge of the effects of a drug in contracting the blood-vessels by observing the capillaries, because the size of these vessels is very variable at all times. Capillaries will not always have the same size in the same region of the body. One such minute vessel may appear so narrow that a single red blood-corpuscle passes through it with difficulty; at another time the same capillary will be wide enough to afford room for two or three such corpuscles to travel abreast. At certain moments, as when the access on the arterial side is blocked, or when blood for some reason ceases to flow into it, the capillary may be empty, its walls collapsed and in contact, and its lumen nearly abolished. At another time, when blood is flowing into it at high pressure, the capillary may be widely distended. It is, therefore, more accurate to watch the arterioles and larger capillaries only, and to base opinion chiefly upon micrometric measurements of the vessels, which is an easier method of observation.

(To be concluded.)

[1] British and Foreign Medico-Chirurg. Rev., vol. i. 1872.

MEDICAL PROGRESS.

Treatment of Nasal Diphtheria.—In the *Revue Générale de Clinique et de Thérapeutique*, RAULIN recommends the following treatment for nasal diphtheria, both in adults and children. The membrane is not to be removed by direct manipulation, but is to be detached by means of antiseptic irrigation, while to prevent its re-formation, the surfaces upon which it is growing are to be covered by the following:

℞.—Lactic acid	. . . .	30 grains.
Carbolic acid	. . . .	45 "
Pure glycerin	. . . .	1 ounce.

After the disappearance of the exudate the catarrhal rhinitis which follows is best treated by means of astringent applications, and by washing out the nostrils with a spray composed of a solution of borate of sodium, or Dobell's solution may be used instead.

The Treatment of Strangulated Hernia by Belladonna and Atropine.—HAGEN, in the *Centralblatt für Chirurgie*, states that in twenty cases of strangulated hernia he has employed the following treatment: For several hours the hernial tumor is carefully treated by inunctions of an ointment made by adding 1 drachm of the extract of belladonna to 10 drachms of benzoated lard, and finally, under the skin, immediately over the tumor, is injected by means of a hypodermic syringe, $\frac{1}{150}$ grain of sulphate of atropine, which may be repeated if necessary. At the same time with these inunctions and injections taxis is employed, and in a certain number of cases Hagen found it unnecessary to resort to herniotomy. The employment of the belladonna and atropine renders the tumor more soft and yielding and furthers spontaneous reduction of tension. The reason for this treatment rests upon the statement of Schmiedeberg that belladonna and atropine in minute doses cause a contraction of the mesenteric vessels and an increased peristalsis of the intestinal walls.

Indications for Operation in Gastric Ulcer.—NISSEN (*St. Petersburger medicinische Wochenschrift*, No. 41, 1890) discusses the question of operative interference in cases of circular ulcer of the stomach, and relates a case from the clinic of Professor Unverricht. The patient was a man, aged forty-six years, who had had the usual signs of an ulcer of the stomach since July, 1887. His disease progressed with the usual symptoms of violent pain in the epigastrium, vomiting of blood, and progressive wasting, until September, 1889, when the symptoms pointed to perforation of the ulcer with commencing peritonitis. Professor Wahl thereupon opened the ab-

domen by an incision in the linea alba between the umbilicus and ensiform cartilage. There was no free gas in the peritoneal sac, and the stomach was easily made to present itself in the wound. Neither palpation nor inspection showed anything abnormal, and the serous coat was smooth and shining, although abnormally vascular. There was no peritonitis, however, and nothing to explain the clinical signs. The abdomen was closed, and the patient progressed fairly well for some days, but a month after the operation his temperature rose, and there was pain in the abdomen, culminating in collapse, from which he died. The clinical diagnosis was that of a perforating ulcer of the stomach with consecutive peritonitis. An examination was made and the left lobe of the liver was ascertained to be adherent to the stomach, and when the adhesions were broken, a small perforation was found in the anterior wall of the stomach. This hole had allowed the contents to escape into the peritoneal cavity. The stomach itself was hour-glass shaped, and had a large ulcer at its lesser curve extending down the anterior wall, where it had given way. In commenting upon this case Nissen points out that the indications for performing an operation, namely, perforation and commencing peritonitis, may not be fulfilled unless the lesser omentum be torn through and the posterior surface of the stomach explored with the finger. Nevertheless, should an ulcer be situated there, adhesions with the pancreas will often be found. A better means of diagnosing the position of ulcers seems essential to the successful performance of these operations.—*British Medical Journal*, January 3, 1891.

Treatment of Chancroid.—In *La Tribune Médicale*, CASTEL gives a summary of the present treatment of chanchroid. After stating that a large number of remedies have been brought forward during the last few years for the cure of this condition, he points out that iodoform is probably the best of these, and gives the following ways in which iodoform may be employed:

℞.—Iodoform . . . . 2 parts,
Powdered coffee . . . 1 part;

℞.—Iodoform . . . . 10 parts,
Carbolic acid . . . . 1 part;

℞.—Iodoform . . . . 2½ drachms,
Carbolic acid . . . 2 grains,
Essence of peppermint . 1 to 2 drops;

℞.—Iodoform . . . . ½ ounce,
Camphor . . . . 75 grains,
Essence of roses . . . 2 drops;

℞.—Iodoform . . . . 1 drachm,
Coumarine (principle found in Tonka bean) . . . } 15 grains;

℞.—Iodoform,
Powdered quinine,
Powdered benzoin,
Carbonate of magnesia (saturated with oil of eucalyptus), equal parts of each.

All of these methods mask, to a great extent, the disagreeable odor of the iodoform without in any way interfering with its favorable therapeutic effect. Castel also notes the following formulæ, which have been recommended in America, Germany, and France:

℞.—Salicylic acid . . . . 15 grains,
Powdered chalk or starch . 2 drachms;

℞.—Salicylic acid . . . . 20 grains,
Alcohol . . . . . 45 drops,
Benzoated lard . . . 2 ounces;

℞.—Salicylic acid . . . . 15 grains,
Alcohol . . . . . 2 ounces;

℞.—Salicylic acid . . . . 30 grains,
Alcohol . . . . . 3 ounces.

It is also stated by Castel that pyrogallic acid is a very useful application, and that Terrillon uses the following formula:

℞.—Starch . . . . . 1½ ounces.
Vaseline . . . . . 6 "
Pyrogallic acid . . . 1½ "

The salicylic and pyrogallic acid prescriptions are, of course, very much more powerful stimulants and irritants of the sore than are those of iodoform which have just been given.

The Treatment of Urticaria.—QUINQUAND recommends the following treatment for this troublesome affection: Internally he prescribes the alkalies, the arsenite of sodium, and naphthol; and when the itching becomes intolerable, he relieves it by the following lotion:

℞.—Boric acid . . . . 1½ ounces.
Chloral . . . . . 1 drachm.
Water . . . . . 6 ounces.

The following powder is also of value:

℞.—Powdered starch . . . 1½ ounces.
Oxide of zinc . . . . 3 drachms.
Salicylic acid . . . . 1 drachm.

External Application of Aristol.—The *American Journal of Pharmacy* quotes the following formula for an aristol paste:

℞.—Aristol . . . . . 3 parts.
Alcohol . . . . . 5 "
Ether . . . . . 5 "
Soft soap . . . . 30 " —M.

Soft paraffin is also a good vehicle, and a mixture of equal parts of lanolin and petrolatum has been recommended for the same purpose.

Sulphur in the Treatment of Smallpox.—According to the Paris correspondent of the *Archives of Pediatrics*, DR. ISCAR prescribes sulphur in cases of smallpox, and claims much success. He thinks that it is eliminated by the skin and that this accounts for the good effects. For children he uses the following formula:

℞.—Washed sulphur . . . 2½ drachms.
Glycerin } of each 15 "
Orange-flower water }
Syrup . . . . . 7½ " —M.
Dose, one teaspoonful every hour.

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SATURDAY, JANUARY 31, 1891.

OPPOSITION OF HOMŒOPATHS AND ECLECTICS TO THE MEDICAL EXAMINERS' BILL.

THE MEDICAL NEWS recently published and made editorial comment upon the Bill prepared by the Medical Society of the State of Pennsylvania to establish a State Board of Medical Examiners, similar to those existing in Minnesota, Virginia, and other States. It was then said that the Bill was a just and fair one to the State, the profession, the candidate desiring license to practise, and to those practitioners believing in special dogmas. An opposition to a State Board of Examiners has been developed, however, on the part of the homœopaths and eclectics, who, in combination, have prepared and introduced a Bill into the House of Representatives at Harrisburg, entitled "An Act to establish a State Board of Medical Education," etc. The text of this Bill is published in the present issue of this journal, in order that its provisions may be carefully studied. Its fundamental principle is that the Board shall regulate the extent and character of the preliminary education of intending medical students, and fix the character and time of instruction given in medical schools. It shall issue, without examination, certificates to all graduates of the medical schools of Pennsylvania, which must conform to the standard set by the Board; and shall examine graduates of schools situated outside of Pennsylvania which do not appear to conform to the said standard.

The bill introduced by the homœopathists and eclectics, however, does not seem to be carefully worded or justly conceived. There is no provision to assure the public that the graduating examination in the medical colleges shall be a sufficiently rigid one. "The methods of instruction employed and the facilities for teaching" are to be inspected (see Section 6); but after such inspection the colleges may graduate the most ignorant persons after secret examinations of a most trivial kind. The preliminary examination is also to be regulated as to extent and character, but no attempt is made to see that it is faithfully conducted. The casual reader will see that no protection against medical ignorance and incompetence would be given by such a law. At the present time there are colleges in all parts of the world which have good methods and excellent facilities, but the graduates need not, and often do not, attain much proficiency, because the final examination is too lax.

The defective protection afforded by the bill shows that it is far inferior to the bill to "Establish a State Board of Examiners," published in THE MEDICAL NEWS, January 10, 1891. In addition, the evident intentional injustice of the homœopathic and eclectic Bill to Establish a Board of Medical Education makes its defeat an imperative necessity on the part of the regular medical profession. It is drawn (see Section 1) in such a manner that the appointing Governor must always put the regular profession in a perpetual minority. There must forever be out of the 9 members 6 irregular practitioners upon the Board, viz., 3 homœopaths and 3 eclectics. In other words, the homœopathic and eclectic physicians of Pennsylvania, who number about 1000, are to have police supervision over and power to annul the charters (see Section 8) of the five regular medical colleges of the State, which represent nearly 7000 resident practitioners of rational medicine, and this in face of the fact that the irregular physicians have but a single college in the Commonwealth. Other defects in the law are that professors in medical schools may be appointed on the Board, and that no two members shall be residents of the same county. Consequently, the sole member from Philadelphia County would probably always be a member of the faculty of one of the medical schools. The possibility of just educa-

tional supervision under such circumstances is very doubtful.

It is astonishing that the homœopathic physicians who have long expressed a desire for a higher standard of education, should have combined with the eclectics to defeat the non-sectarian and carefully-drawn bill to create a Board of Medical Examiners. This bill provides that the Governor shall appoint three eclectics from nominees made by the Eclectic Medical Society of Pennsylvania.

We would urge every member of the profession in this State to write to his representatives at Harrisburg, insisting that the basis of representation shall be as fairly proportioned in this act as in any other measure which may become a law. Until we have proper methods of protecting our fellow-citizens and ourselves the profession of Pennsylvania must always be under a cloud of illiteracy and quackery.

CORRESPONDENCE.

PARIS.

Koch's Remedy in Paris.

KOCH'S lymph has now been experimented with in Paris for more than a month. The observations have been made upon medical, dermatological, and surgical cases. In medical cases, such as pulmonary tuberculosis, the results have not been as favorable as was expected. In cutaneous tuberculosis, improvement or changes in the prëexisting condition have certainly been brought about, and seem to indicate that the remedy will prove to be of some value in such diseases. In surgical tuberculosis the results have not been encouraging, but we shall have to wait for months before a positive opinion can be expressed as to the value of the remedy in all classes of tubercular cases.

As soon as the precious lymph was received it was placed in the hands of one of our most careful scientific men, Professor Cornil, the cases treated being watched by his very careful assistants, Professor Chantemesse and Dr. Vidal. Dr. Cornil began his inoculations in the latter part of November. The first patient to receive the treatment was a very extensive case of lupus, covering the whole face and the left arm, forearm, and hand. The often-described action of the remedy was very marked in this patient. Six hours after the injection she began to cough, and it was found that she had tuberculous lesions in the upper portion of her lungs. The second case was one of tubercular epididymitis; the right spermatic cord was about one-half inch thick, while in the left epididymis there was an almost imperceptible nodule. Under the influence of the remedy the right epididymis enlarged and the nodule in the left epididymis became of the size of a hazelnut. No marked general symptoms occurred in this case after the first injection, but after the second injection the patient complained of severe renal pain, and was found to be suffering from hæmaturia and albuminuria, the albumin and blood being present for several days. A third case of lupus was also injected, and while no general symptoms appeared, the local symptoms were pronounced.

Professor Cornil has found that reaction is always produced by the lymph in cases of undoubted tuberculosis. Certain irregularities, however, have been observed, some patients having a very slight rise of temperature, although there was a very marked local reaction in the lung. In some cases both the local and general reaction were marked, while in others the general reaction was marked, although the local was very feeble. The general symptoms differ acccording to the quantity of liquid injected and also the idiosyncrasy of the patient. In a case of tubercular arthritis of the elbow of twenty years' duration which was thought to be cured, five milligrammes of the lymph brought on no reaction. In another case of old tubercular arthritis, no reaction was observed. Professor Cornil concludes that in old tubercular arthritis which has reached the fibrous stage, no reaction will occur. On the contrary, the reaction is much more intense when we have to deal with a rapidly developing recent tuberculosis.

As regards the sensitiveness to the drug, Dr. Cornil presented a patient suffering from tuberculous lesions of the skin, cold abscesses, tuberculous disease of the elbow and wrist, necrosis of the malar bone and pulmonary tuberculosis in the first stage. After the injection, the patient had a red and painful swelling on one finger. It is probable that this tubercular lesion was merely made evident by the injection.

A child about thirteen years old, who had had pulmonary tuberculosis for only a month presented, when admitted, a few dry crackling râles under the left clavicle and also slight dulness on percussion. At the first injection the physical signs were greatly increased.

When one has to deal with latent tuberculosis, the injections increase the physical signs, and render distinct symptoms which were previously doubtful.

All the organs of the body are liable to be affected by Koch's lymph, and two of the lupus patients who were injected, presented marked hæmaturia. The urine, which was of a rose color on the day following the injection, became brown for four or five days after, and contained albumin. On microscopical examination besides free blood-corpuscles, hyaline casts filled with deformed blood-corpuscles, were found.

Three hypotheses are to be considered as an explanation of these phenomena, first, tubercular granulations may have been present in the kidney; second, there may have been a slight nephritis with an epithelial degeneration or an interstitial periglomerulus lesion; or third, these patients may have had amyloid degeneration of the kidneys. As soon as albumin is detected in the urine of a patient treated by these injections, no further injections are given until the urine has returned to normal. Strange to say, in a case of advanced phthisis, with diabetes and a double calculous pyelonephritis, injections instead of bringing on hæmaturia, have shown no action on the kidney—the quantity of pus in the urine has even diminished.

Five nephritic patients who presented skin-lesions were also inoculated, for the purpose of ascertaining the

action of the remedy on them, each receiving one milligramme, but none of them presented any reaction.

As regards temperature, Professor Cornil and Dr. Vidal have observed that the rise is not confined to one day, but may return on several successive days. In one case the temperature reached its maximum in from eight to twelve hours, it then rapidly fell within the four following hours to nearly normal, and in twelve hours again rose to the former height. In another case, one of lupus, the temperature rose daily for three days.

A third case, a girl aged seven years, who received one-half milligramme of the lymph, presented no general reaction immediately after the injection, but between the second and fourth days the temperature rose and varied between 100° F. and 104°. This case shows that one cannot safely make an injection every day.

Dr. Henague has also made examinations of the amount of oxyhæmoglobin in inoculated patients. Out of twenty-two patients he found that in thirteen the oxyhæmoglobin was diminished. In three there was first a diminution then an increase. In three an increase, and in three no variations were observed. A diminution in the quantity of oxyhæmoglobin seems to be the rule.

It must be stated, that the opinion arrived at now, after more than a month's treatment, is that in most of the patients suffering from cutaneous tuberculosis the symptoms have been *ameliorated* but not *cured*.

One must be very careful in treating lupus with the lymph, for in the majority of cases treated here, the patients presented physical signs of tuberculosis of the lungs, when no trace of the disease could be found before the inoculation.

In surgical tuberculosis the results are variable, in some cases the symptoms are ameliorated, in others aggravated. As a rule, whenever the lesion is deeply situated swelling and pain are annoying symptoms and will require the interference of the surgeon, while if the lesion is in communication with the surface by a fistulous opening, no danger need be feared.

Injections of the lymph for laryngeal tuberculosis have been made at several hospitals, the conclusion being, that the method may be of service, but must not be used except by a specialist, who should be ready to operate if stenosis of the larynx occurs.

In a few words the opinion in Paris is that the curability of phthisis by Koch's lymph is very doubtful.

NEWS ITEMS.

State Board of Medical Education.—The following act has been presented to the Legislature of Pennsylvania by the homœopathists and eclectics:

AN ACT

To Establish a State Board of Medical Education, to Define the Powers and Duties of such Board, and to Make an Appropriation therefor.

SECTION 1. Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same: That within three months after the passage of this Act, the Governor shall appoint, by and with the advice and consent of the Senate, a State Board of Medical Education, consisting of nine members, physicians in good standing, citizens of this Commonwealth, three of whom shall serve for two years, three for four years, and three for six years; and thereafter, biennially, there shall be appointed in the same manner three members of the said Board, one from each school of practice, as provided in this Section, to serve for six years in the place of those whose term shall have expired. They shall be graduates of some legally-chartered medical college, or university having the power to confer medical degrees, who shall have practised medicine or surgery for a period of not less than five years. Provided: That in the appointment of said Board the members shall be chosen equally from lists of names, each list containing the names of ten registered physicians submitted by the State Medical Societies of the Commonwealth of Pennsylvania, to the intent that the three systems of medicine—*i. e.*, homœopathic, allopathic, and eclectic—be equally represented thereon; and provided, further: That no two members shall be residents of the same county. In default of the submission of such lists, the appointments shall be made by the Governor at his discretion from among the registered physicians of the Commonwealth having the qualifications specified in this section.

Every appointment to fill a vacancy, or vacancies, in the said Board shall be for the unexpired term, and the said vacancy, or vacancies, shall be filled by the Governor within sixty days after notification of the same, in accordance with the provisions hereinbefore stated; and he shall have power to remove any member of said Board for criminal, scandalous, or dishonorable conduct.

SECT. 2. The said Board shall be known by the name and style of "The State Board of Medical Education of the Commonwealth of Pennsylvania," and shall have a common seal, and may make and adopt all necessary rules and regulations and by-laws, not inconsistent with the Constitution and laws of this Commonwealth, or of the United States, and shall have power to locate and maintain an office for the transaction of its business.

Five members of said Board shall constitute a quorum.

SECT. 3. The Board shall meet at least twice each year, at such times and places as they may determine upon after the first meeting, which shall be held within sixty days after their appointment at such time and place as the Governor may direct, at which time, and annually thereafter, they shall organize by the election from their own number of a President, and a Secretary who shall also act as Treasurer. Provided: That the President and Secretary are not of the same school of medicine.

SECT. 4. No member of the Board, except the Secretary, shall, as such, receive any salary; but the actual travelling and other expenses of any member, while engaged in the actual duties of the Board, shall be allowed and paid on presentation to, and approval by, the Auditor-General, of an itemized account with vouchers annexed.

SECT. 5. It shall be the duty of said Board of Medical Education to make all regulations as to the extent and character of the preliminary education which shall be required of all students of medicine, and notify the dean

of each medical college of the same. Any change in the standard required must be announced by the Board at least one year prior to going into effect.

SECT. 6. The Board of Medical Education shall fix the minimum curriculum and length of course of studies requisite to graduation. Provided: That the course shall not be less than four years, which shall include three annual terms of lectures. The Board shall delegate one or more of their number, who, from time to time, shall make an inspection of the methods of instruction employed, and the facilities for teaching, in each such medical college, and annually report the same to the Board.

SECT. 7. It shall be the duty of the Board to issue, under seal, to each graduate of such medical colleges as upon evidence of the dean and the secretary, or registrar of the same, shall have conformed to the requirements of the Board as herein before provided, a certificate duly setting forth such facts. Such certificate shall entitle said graduate to register in any county of the State, in accordance with the act entitled, "An Act to Provide for the Registration of all Practitioners of Medicine and Surgery," approved June 8, A D. 1881.

The fee for such certificate shall not exceed two dollars.

A similar certificate may be granted to graduates of medical colleges of other States, who may desire to practise medicine or surgery in this State, provided that such colleges stand approved by the Board of Medical Education of this Commonwealth as maintaining a standard in every respect, preliminary and final, equal to that required of the medical colleges within this Commonwealth.

The fee for such certificate shall not exceed five dollars.

Graduates of colleges having a lower standard than that required by the Board of Medical Education of this Commonwealth, may receive the certificate of the Board upon a satisfactory examination before said Board. Such examination shall be in writing, and shall apply to the preliminary education, as well as the medical knowledge of the applicant. Provided, That all questions pertaining to materia medica, and therapeutics, shall be propounded and acted upon, by members of the Board of the same school of medicine with the applicant.

The fee for each such examination shall be twenty dollars.

All examination papers shall be kept upon file, and open to inspection, for a period of two years in the office of the Board.

SECT. 8. If upon investigation the Board of Medical Education discovers, that after the passage of this act, any medical college within this Commonwealth, has granted the degree of doctor of medicine to any person, or persons, deficient in respect to either of the aforementioned preliminary or final educational requirements, or that any medical college within this Commonwealth, has conferred the degree of doctor of medicine upon any person or persons, without having passed a final examination, it shall he the duty of the Board to notify the dean of said college of such fact, and proceed against such college for such infringement of the law. The penalty for a first offence shall be a fine of not less than two hundred nor more than one thousand dollars. For a second offence, a fine of one thousand dollars shall be imposed, and the certificate of the Board of Medical Education shall be withheld from future graduates of said college, except upon examination before said Board, as provided in Section 7 of this Act. In case of conviction for a third offence, the charter of such college shall be annulled.

SECT. 9. The Board of Medical Education is hereby authorized and empowered, to bring suit for the collection of such fines, and imposition of such penalties, in the courts of the county wherein such college may be located.

All fees and fines collected by said Board shall be paid to the State Treasurer.

SECT. 10. After the first day of June, 1892, no physician shall be permitted to register in any county of this Commonwealth except upon presentation of a certificate as provided for in Section 7 of this Act whereupon, he he or she shall be entitled, upon the payment of one dollar to be duly registered in the office of the Prothonotary of the Court of Common Pleas in the said county; and any person violating the provisions of this Act shall be guilty of a misdemeanor, and, upon conviction thereof in the Court of Quarter Sessions of the county where the offence shall have been committed shall pay a fine of not more than fifty, nor more than five hundred dollars for each offence.

SECT. 11. Nothing in this Act shall apply to commissioned medical officers of the United States army or navy or of the United States Marine-Hospital Service, nor to the member of the house or resident staff of any legally chartered medical college or university or hospital during his or her term of service therein, nor to physicians of other States meeting duly registered physicians of this State in consultation, nor to those practising dentistry exclusively, nor in any manner whatever prevent or interfere with the dispensing and sale of medicines or medical appliances by apothecaries or pharmacists, and nothing in this Act shall be construed to prohibit the practice of medicine and surgery within this Commonwealth by any practitioner who shall have been duly registered before the first day of February, 1892, according to the terms of this Act, entitled "An Act to provide for the Registration of all Practitioners in Medicine and Surgery," avproved the 8th of June, Anno Domini, 1881.

SECT. 12. The Board shall make to the Governor, on or before the first day of December of each year, a full report of the work of the Board for the year.

SECT. 13. For the purposes of this Act, the words "practice of medicine or surgery," shall mean to treat, or attend, any person for money, gift, or reward.

SECT. 14. The sum of two thousand dollars is hereby appropriated to meet the necessary and legitimate expenses of the said Board.

SECT. 15. Section 4 of an Act entitled "An Act to provide for the Registration of all practitioners of Medicine and Surgery," approved the eighth day of June, Anno Domini 1881, is hereby repealed.

Obituary.—Edward Bellamy, F.R.C.S., senior surgeon to Charing Cross Hospital, London, died January 4, 1891, of acute pneumonia, at the age of forty-eight years.

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ORIGINAL ARTICLES.

OLD AGE AS A FACTOR IN SURGERY.

BY N. F. GRAHAM, M.D.,
PROFESSOR OF SURGERY IN THE MEDICAL DEPARTMENT OF HOWARD UNIVERSITY, WASHINGTON, D C.

MANY surgeons have always clung to the opinion that in old age there is little power to recover from surgical diseases, and when we consider the changes which have taken place in the tissues and organs of persons advanced in life, it is not to be wondered at that such an idea should prevail. The laity have always believed, and still believe, that old age is a grave barrier to recovery from either injury or disease.

Certain atrophic and degenerative changes take place in old age which affect glands, muscles, and other soft parts. Cells become smaller without change of structure. The spleen and lymphatic glands become greatly diminished in size, and the same is true of the villi and glands in the digestive tract. At a still later period of life senile changes commence in which there are fatty degeneration and calcareous deposits. The fatty changes affect muscles, nerves, vessels and glands; the calcareous deposits are found in muscles, ligaments, cartilages, heart, and bloodvessels. The result of these atrophic and degenerative changes is impairment of all the functions of the body. The cellular elements, though diminished in size, still retain their physiological characteristics, and so, when the tissues become inflamed, the same changes take place in the cells and bloodvessels as in younger subjects.

The cellular structures of the old will return as certainly, though not as speedily, to the embryonic state when a part is in a state of inflammation, as in the young or middle-aged. This affords the best explanation of the facility, and very often the certainty, with which wounds and injuries are repaired in old persons.

The readiness with which fractures and grave injuries in the aged are repaired is every day becoming more and more manifest, so much so that our preconceived ideas are changing, and age can no longer be adduced as a strong reason against the hopeful and careful treatment of wounds, ulcers, fractures, and other surgical diseases, with fair chances for good results.

Recovery from serious illnesses as well as from injuries in old people is very interesting. It seems strange, when the other nutritive forces are failing, or already gone, that those connected with repair should remain in so good a condition. The explanation must be found in the fact that the cellular elements retain their normal physiological condition (except as to size) as long as the individual lives; although, for successful results, the blood and bloodvessels need to be in, at least, fair condition.

Certain conditions of the body exist in these cases which give them some advantages over the young. They possess a lower and slower excitability. They are not so liable to hæmorrhages—primary or secondary—or to acute inflammatory troubles. Their nervous systems have undergone changes which make sensation more obtuse, and, therefore, they are not as subject to acute nervous affections, such as tetanus and painful spasm of the muscles, as are younger subjects.

On the other hand, there is a strong tendency to diseases of the heart and vessels, so that shock is not so well borne, and as a consequence there is feeble or slow reaction. This fact has, very naturally, prejudiced surgeons against undertaking operations in old persons; but if, on examination, the vital organs—the heart and nerves—are found sound, with a firm, regular pulse, there need be no hesitation in operating, as, under such circumstances, the chances for success are good.

After the age of seventy years the number of persons who require operations is not very large, but to those who do a refusal is often given by the surgeon and their friends on the plea of age. Provided that the patient is in fair general health, with a hereditary tendency to long life, mere age is not a good reason for withholding treatment either with the view to prolonging life, or for the relief of acute suffering.

The following cases, some of which came under my own observation and treatment, and others of which were selected from various sources, show wonderful recuperative powers in very old men and women:

CASE I.—J. S., a negro, aged ninety-two years, came under my care in the Freedmen's Hospital in the winter of 1882, suffering from gangrene of the left foot and leg, the result of senile changes in the arteries. The "line" was irregular, extending around the limb and forming a triangle, the apex reaching within four inches of the lower edge of the patella, the base occupying the lower part of the

belly of the calf. The granulations were abundant and healthy in the large groove which separated the dead from the living tissues.

On January 5th, I amputated the leg three inches below the knee by the double-flap operation. The only bleeding was free oozing from the capillaries, and there were no vessels which required ligatures. The flaps were brought snugly together, stitched, and the stump dressed with iodoform-gauze. Healing took place, mainly, by first intention, and the man was able to be about on crutches at the end of six weeks.

CASE II.—S. L., a white male, aged eighty-seven years, with an axe-wound of the face, cutting directly through the centre of the bridge of the nose, and with a downward inclination deep into the maxilla, and opening into the mouth through the right side, making a cut five inches in length. The divided portion of the nose, with the other soft parts, fell over the mouth and chin. When I reached the patient he was unconscious from shock and loss of blood, with two small arteries—one on each side of the nose—spurting. I ligatured the vessels, cleaned the wound, and adjusted the detached part of the nose and face, placing the first stitch in the centre of the bridge, and five others on each side; applied narrow adhesive-plaster strips between the stitches, and covered the whole with a moist cloth—the only dressing at hand. The wound healed readily, and the man was able to be out of bed in four days, and out of the house in ten.

CASE III.—Mr. H. L., a large, strongly-built man, eighty-eight years of age, noticed in December, 1887, a small pulsating tumor in the left popliteal space, which rapidly increased until it reached the size of a small orange, when it suddenly became very painful. He also suffered from intense pain in the toes, foot, ankle, and leg of the same side. At this juncture—early in March, 1888—he consulted a good surgeon, who advised him to wear an elastic bandage or snug knee-cap, which he did without much benefit.

I saw him about the middle of March, when there was no abatement of the pain, which prevented sleep. The foot as far as the instep was white, and there were discolored patches on all the toes. The first stage of gangrene was clearly marked. His great age was discouraging, considering the complicated nature of the case. I flexed the leg on the thigh at an angle of forty-five degrees, wrapped the foot and ankle in a liberal amount of cotton-wool, and kept the patient well under the influence of morphine. This, with friction of the leg and foot twice daily, for an hour at a time, with good food and stimulants, was the only treatment. In about five weeks the aneurism ceased to pulsate, the gangrene remained limited to a small portion of the great and second toes, and in two months he was able to go about on crutches, which he has now discarded, though he is still lame. The aneurism is completely cured, and the loss of substance from gangrene is scarcely noticeable.

CASE IV.—In December, 1884, Mrs. S., aged ninety-one years, came under my care with a fracture of the bones of the forearm near the wrist, the result of a fall. I adjusted the fracture and applied two well-padded, straight splints. Good union took place in six weeks, with the result that the arm was as useful as before the fracture.

The same patient had had a fracture through the neck of the left femur, at the age of eighty-one years, from which she recovered in ten weeks with firm union and a useful limb, though with one and one-half inches shortening. The only treatment for the fractured femur was the application of sand-bags, without extension.

CASE V.—In November, 1886, I treated Miss B., aged seventy-six years, for fracture of the lower end of the right radius, by adjusting the fracture and placing a pistol-shaped splint on the limb. At the end of six weeks union was good, and in eight weeks she could use the hand as well as ever. Five years previously to the date of the fracture, I assisted in removing her right breast for cancer, from which she made rapid recovery, though in 1886 the disease again developed in the scar and axillary glands, and has since proved fatal.

CASE VI.—Mr. F., a robust man, seventy-five years old, came under my care in August, 1890, with a large carbuncle on the back of the neck, extending from just below the occipital prominence to the fifth cervical vertebra and on both sides to the ears. The size of the open slough was three by four inches. Under ordinary treatment, with the addition of injecting into the mass, twice daily, from two drachms to half an ounce of peroxide of hydrogen, which was first done by Dr. Balloch during my absence from the city, and continued by me after my return, the patient made an excellent recovery, and was out in six weeks.

CASE VII.—In November, 1885, I operated on J. G., aged seventy-four years, for epithelioma of the lower lip, and removed a wedge shaped piece, the base of which extended from the angle of the mouth to the centre of the lip and the apex to near the symphysis. I brought the edges together with three pins and a stitch through the upper part of the lip. Union took place by first intention. There is no deformity and no signs of a return of the disease.

CASE VIII.—R. S., aged eighty years, came under my care in July, 1888, for epithelioma of the lower lip, which had destroyed two-thirds of the margin of the lip, and had extended as an irregular ulcer to the chin. I removed a V-shaped piece, including the diseased portion, brought the cut edges together with pins, and enlarged the mouth by an incision an inch in length on the sound side, stitching the mucous membrane to the skin. Union took place by first intention, leaving but a small notch at the angle of the lips, in spite of the fact that he was a hard drinker. The man is still robust and has no evidences of a return of the disease.

The *Dublin Medical Press*, August, 1864, reports the case of May C., aged one hundred and one years, whose right hand was amputated for cancer on April 10, 1864. Healing was mainly by first intention, and repair was complete in one month.

In the same issue of that journal is reported the

case of Miss A., aged eighty-four years, suffering from scirrhus of the left breast. The entire gland was removed, and recovery took place with no bad symptoms.

The *Bristol Medical Journal*, March, 1886, reports the case of a man, aged eighty-nine years, who recovered with good use of the knee, after a severe fracture of the patella; and in the same journal is reported a similar accident, with equally good results, in a man aged seventy-two years.

The *British Medical Journal*, June, 1883, reports a case of operation for strangulated femoral hernia in a woman aged eighty-eight years. Recovery was rapid, though she was so feeble that her relatives protested against the operation, and, as they said, wished the old lady to die in peace. There is also reported in this journal a case of fracture of the right femur at the age of eighty years, with good recovery; and a man, aged ninety-two years, with fracture of the bones of the forearm, good union taking place in the ordinary time, with fair use of the hand; also the case of Miss S., who died at the age of one hundred and four years. She broke the neck of her femur at the age of one hundred and one years, and, though union failed to take place, she lived three years afterward, and went about comfortably on crutches.

A Hindoo, aged ninety-six years, whose case is reported in the *Medical Times and Gazette*, 1867, p. 607, suffered from a fracture of the left tibia and fibula above the ankle, the foot being bruised and excoriated. The fracture occurred on September 11th, when it was dressed in ordinary side splints. On September 29th he could bear his weight on the leg, and on October 11th he walked out of the hospital perfectly well.

Gowers, in *The Lancet*, 1887, vol. ii. p. 85, reports two cases of epithelioma. One was in a man aged seventy-eight years, the left cheek being covered by a sore seven inches in circumference, the removal of which was followed by recovery. The other was in a woman aged eighty-two years, requiring amputation of the finger for the disease. Union by the first intention took place.

In the same journal Dr. Hutchinson reports the case of a man ninety years old, who suffered from gangrene of the hand and forearm. The line of demarcation formed and the gangrenous mass separated. Amputation of forearm; stump healed well.

Dr. Ferguson reports in the same number of *The Lancet* a case of melanotic sarcoma, in a man aged seventy-five years. The mass was situated at the apex of Scarpa's triangle, and was removed with difficulty, exposing in the operation the femoral vessels. Erysipelas supervened, but the patient made a good recovery.

In *The Medical Journal and Review*, 1849, is reported the case of a negro known to be one hundred and two years of age, and believed to be older, who made a good recovery after amputation of the right leg. Dr. Thomas Annandale, in the same journal, reports twelve cases of an average age of seventy-two years, on whom he operated at various times. Five of the operations were for cancer, one was resection of the elbow; two were amputations of the arm; two for large fatty tumors; and one in a man aged seventy-eight years, for strangulated hernia. He also operated for stone in the bladder on a man seventy-four years old. In all of these cases there was recovery followed with good results.

As a general rule, old people tolerate pain better than do the young. Owing to the changes which have taken place in their nervous systems their sensibilities are obtuse, and, therefore, they complain less, while owing to the same condition of the nervous system, combined with other senile changes in the heart and other organs, shock is more severe and not so quickly rallied from. They endure operations for pathological conditions, such as the removal of tumors, cancers, etc., remarkably well, because they have in some degree acquired a tolerance to the gradual change and tissue-metamorphosis which render operations necessary.

Their recovery from wounds is not so rapid, for the reason that the cells and intermediate substances are more rigid, and the softening process which changes the tissues when in a state of inflammation to a condition suitable for repair is slower. In the old, tissue-genesis predominates over suppuration. The growth of morbid tissue goes on at a more moderate pace; cell-division is not so rapid or general as in the young, and, as a consequence, there is less waste from pathological conditions. We can also see how the processes of repair can take place more readily when there is but little excitability of the tissues, a condition often found in the aged, and which may also partly explain their recuperative powers. It is, however, but reasonable to conclude that they are much less able to stand the shock of injuries and operations than are persons in the prime of life, owing to the senile changes which have affected every organ of the body, and, particularly, the heart, bloodvessels, and nervous system. Hence in shock lies the greatest danger to the aged, and if the patient rallies the prognosis, so far as repair is concerned, may be considered good.

REMOVAL OF RENAL CALCULI FROM THE MUSCLES OF THE LEFT LUMBAR REGION.

BY MARIE B. WERNER, M.D.,
OF PHILADELPHIA.

MISS G., aged thirty-two years, gives the following history: As long as she can remember she has suffered from recurring pains in her left side radiating down toward the groin.

She had scarlatina at the age of seven years, followed by so-called remittent fever. Some swelling of both the hands and feet was noticed at that time, and the urine was high-colored and deposited a brick-dust sediment; no chemical or microscopical examination was made.

At the age of ten years she had a slight attack of measles, followed by good recovery.

During the winter of 1876–77 she had an attack of so-called intermittent fever associated with pains in the back and œdema of feet, hands, and face. The urine was heavily loaded with a brownish-red sediment; no chemical or microscopical examination was made. Recovered in March, 1877.

In 1882 the patient suffered from pain in her abdomen and back, radiating to the groin and thigh. This was pronounced rheumatism. She again became dropsical, and her urine was thick, dark, and of a peculiar odor. Patient remembers a discharge of "blood and matter" from the urethra. There were also high temperature and rigors. After two months' continued pain a lump formed in the left lumbar region.

Home remedies failing, her physician was again summoned, who pronounced the swelling a scrofulous abscess. This was twice lanced. The openings partly closed, but four sinuses remained, through which the contents forced their way.

An attack of pneumonia in the spring of 1889 necessitated long-continued rest in bed, thus interfering with proper drainage. During this time two of the four sinuses closed, and a new one formed just above the crest of the ilium.

When the patient was first seen by Dr. Calista V. Luther and myself, September 19, 1889, she was emaciated and weak, had an anxious expression, and every movement was an unconscious study to immobilize the affected side. Inspection showed two cicatrices and two open sinuses occupying a space of about three inches square, one inch to the median line of the first three lumbar vertebræ, and a third sinus above the crest of the left ilium.

A probe, passed for two inches into one sinus in the back toward the crest of the ilium, met a hard, roughened substance, suggesting necrosed bone. The sinus opening near the crest of the ilium admitted the probe a distance of six inches upward and somewhat backward, and no resistance was felt. A stream of water injected through the longest sinus escaped from the shorter ones in the back.

Dr. Luther examined the urine and found no albumin or pus.

We decided that an exploratory incision was the only proper course of treatment.

On October 26th, the patient being chloroformed, assisted by Drs. Joseph Price, Kynett, and Luther, I made an incision through the two sinuses in the back, and found two calculi, the larger an exact cast of the pelvis of the kidney and with a prolongation which evidently had extended into the ureter. The base of this calculus was marked by roughened prominences, possibly due to extension into the renal tubules. The other calculus was the size of a coffee-bean. (See Figure.)

The long sinus was then opened and thoroughly scraped, making a large, T-shaped wound. There was but a thin wall between the cavity containing the stone and the kidney, which was felt through the relaxed abdominal walls.

An exploring needle was plunged into the kidney in three directions to ascertain if there were other calculi, but with negative results. The wound, thoroughly disinfected with bichloride solution, was

then packed with bichloride gauze, over which was placed a bandage, and the patient was put to bed. Thirty-six hours later the lips of the wound were approximated with adhesive plaster.

The long incision, about eight inches in length, healed very kindly; the shorter one, however, refused to close, as it was near the cicatricial tissue left by the two closed sinuses. All stimulation proved of no avail.

December 12. Dr. Luther and I concluded to remove as much as possible of the fibrous tissue and draw the flaps together with sutures. This was done, and some strands of chromicized gut were laid in the bottom of the wound, a dry compress bandage of bichloride gauze held in place by broad adhesive strips was applied and left undisturbed for five days. On removing the strips there were considerable odor and moisture, probably owing to the catgut, which seemed to have acted more as an irritant than a drain. Deep union seemed good, and the surface appeared healthy. Dressed with a ten-per-cent. solution of sulphurous acid.

24th. Only a small space in the triangle was unhealed. This has remained a small fistulous track, and from it the patient believes she detects at times an escape of gas.

Her general condition improved markedly, and the opening is only annoying by its presence.

The calculi were seen by Professor Leffmann, who, after examining the smaller one chemically and microscopically, reports the following:

"The fragment of calculus which you sent consists principally of calcium phosphate mixed with some carbonate. The proportion of organic matter is small and no uric acid can be detected. Under the microscope it is seen to consist of irregular layers."

It is a common occurrence to have nephritis follow an attack of scarlatina. The symptoms of chill and fever, pain in the loins, etc., are common to fevers; but the history of the œdema and the condition of the urine lead me to suspect acute nephritis instead of intermittent and remittent fever in the two attacks mentioned.

The history of the attack during 1882, however, is clearly that of pyelitis. There was general pain in the back and abdomen, while suppuration was announced by rigors and high temperature.

The most notable feature of this case is, that nature, in endeavoring to cast off the offending body, succeeded in entirely expelling it from the kidney, and seemingly repaired the damage done to that organ.

It is one year since the operation, and the patient is in good health. The fistula remains, and she insists that there is an occasional escape of gas; indeed, she states that after an injection of glycerin and iodoform into the fistula, "the yellow powder" was seen in a discharge from the bowels soon after. Is it possible that during the suppurative stage of her disease some calculi found their way into the colon and thus formed a direct communication between the fistula and that organ?

In searching through medical literature the first mention of cases resembling the one just reported is made in the *Lafitte Mémoires de l'Académie Royale de Chirurgie*, 1753, vol. ii. p. 233. Three cases coming under the author's observation are reported:

Case I. occurred in 1734. A fistulous track, resulting from a lumbar abscess, was enlarged by Lafitte and two stones were extracted. The patient was cured.

Case II.—Abscess occurred in 1727, and a stone was extracted in 1738. Recovery.

Case III.—An abscess formed in 1741, and the stone was spontaneously expelled through the fistulous opening six years later.

In conclusion, Lafitte adds a case reported by Gaspard Bauhin, of a girl who had a tumor in the lumbar region following total suppression of urine. After poulticing for two months the surgeon distinguished a hard point in the tumor. This he incised, and from it extracted two stones. The patient was cured.

The foregoing cases may have more interest from a historical than from a practical point of view, since the records are somewhat vague; but they certainly show the recognition of such a condition at that time.

In 1797 Hermann Schützercrants[1] published the case of a patient aged fifty-six years, in whom a stone formed in the right kidney and was extracted through an abscess in the back. During the year 1777 she complained for months of continued pain in her back and loins. This was followed by high temperature, vomiting, and the formation of a soft, œdematous swelling in the right hypochondrium. In the course of twelve or more days distinct fluctuation necessitated an incision, which was followed by a free discharge of pus. Pain and fever abated, and at the end of a fortnight the discharge became thin and watery, with a distinctly urinous odor. A probe introduced into the abscess came in contact with a hard, roughened substance. The opening was enlarged and the stone extracted by forceps. The discharge of urine gradually diminished and at the end of a fortnight entirely ceased.

Thomas Annandale[1] reports the case of a patient aged forty-two years in whom, in 1868, a lumbar abscess formed, was lanced, and discharged healthy pus. Three months later a small, triangular-shaped calculus escaped, and still later some gritty particles were removed from the margin. No urine passed through the fistula. It became necessary to re-open the wound at a later period, when portions of soft calculous matter were extracted. The wound remaining open after several months, Mr. Annandale was consulted, and, on passing a probe for three inches, encountered a hard body. Enlarging the sinus, he extracted a stone weighing 72 grains. Rapid recovery resulted.

This is the latest case recorded which, strictly speaking, belongs to a class of lumbar abscesses resulting from calculi expelled from the kidney through the back, in which the kidney apparently suffered little or no destructive injury. This may be explained by the fact that the correct diagnosis and the treatment of lumbar abscess by an exploratory incision, and, if called for, by nephrotomy or nephrectomy, render cases of neglected abscess exceedingly rare.

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[1] Medical Facts and Observations, vol. vii. p. 285.

THE INDICATIONS FOR SOME OF THE APPLICATIONS COMMONLY USED IN THE TREATMENT OF CHRONIC GRANULAR LIDS.[2]

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The success of the medical treatment of a case of chronic granular conjunctivitis depends upon the application of some remedial agent to produce absorption of the "granulations" which are the essential characteristic of the disorder; and, moreover, to bring about this absorption without destruction of the mucous membrane and the production of changes more unfortunate than the original disease.

In the sections on the treatment of trachoma in text-books occasionally one meets with a sentence reading, "for routine treatment nothing is so effectual" as such and such a caustic application. Precisely on account of this "routine treatment" many patients wander from clinic to clinic only partially relieved. The extreme slowness with which the granulations absorb, and the tedious nature of well-established granular disease of the conjunctiva

[1] Edinburgh Medical Journal, 1869, xv. pp. 21–29.

[2] Portion of the paper on the "Medical and Surgical Treatment of the Granular Lids," read to the D. Hayes Agnew Surgical Society of the undergraduates of the Medical Department of the University of Pennsylvania, December 19, 1890.

are the reasons why ophthalmologists have sought to relegate the treatment of this affection to surgical procedures, and there is no doubt that numbers of cases are managed more successfully by methods distinctly surgical than by astringent and caustic applications. However this cannot always be accomplished, nor is it always wise, and the best method of using the so-called ordinary remedies must be learned.

For the present we will omit reference to operative interference and to the treatment of acute granulations, chronic blennorrhœa (sometimes, but improperly, classed with granular disease), and that form of granulations found in the conjunctiva which by some authors has been called *follicular conjunctivitis*, and classified as a disease separate from true trachoma, and by others looked upon as a mild form of trachoma from which the most severe types may develop. As is well known, the nature of the granulations found in this disease has not been definitely settled, and great difference of opinion as to their origin exist, although the latest researches seem to show that they arise from the natural lymphatic follicles of the part, and that it is the follicles through their changes which originate all the anatomical and clinical qualities of trachoma.

Professor Raehlmann, of Dorpat, who holds views in regard to the origin and nature of trachoma somewhat at variance with those of many other authors, has recently given a description of the life-history of the "granulations" which furnishes a convenient basis for my remarks on their treatment. According to this author, the severe forms of trachoma may arise from the mild varieties which have just been referred to as follicular conjunctivitis, or may develop independently, and are characterized by a follicular eruption, in masses, situated not alone on the surface of the conjunctiva, but also in the depth of the tissue which is infiltrated, and whose circulation is checked, causing partial or extensive disturbance of its surroundings. At first the mucous membrane, of a pale-red or yellowish-gray color, is unevenly rough, slightly or not at all folded, and contains the follicles. These increasing form closely-packed masses side by side and above one another, in such a manner as to compress the true conjunctival tissue and choke its circulation. The mucosa becomes greater and greater in volume, the contents of the follicles soften and ulcers are formed. The infiltration of the neighboring tissue assists in the egress of the contents of the follicles, and brings about a prolapse of the bottom of the ulcer and the formation of warty protuberances. During this ulcerative stage there may be photophobia, lachrymation, and profuse secretion, together with fresh pannus or exacerbations of previously-existing pannus. This pannus consists in the development of closely-packed vessels in the superficial layers of the cornea, sometimes attended by the development of ulcers and formerly believed to be dependent upon a mechanical process; that is, upon the scraping of the roughened lids across the cornea, but described by the author we are now quoting not as a traumatic irritation, but as an independent corneal complication, or follicular formation with lymphoid infiltration, analogous to the conjunctival disease. As the process continues while the surface of the conjunctiva remains rough, distinct prominences are wanting, and the final stage begins to appear, namely, cicatrization. The cicatricial tissue forms from the old follicles, new ones in the meantime arising, act upon the tarsus previously softened by a lymphoid infiltration, and produce the common deformities of the lid and its margin, namely, entropion, distichiasis, and trichiasis.

In addition to the facts thus quoted in regard to the pathological anatomy of this disease it is important to remember that it is directly contagious, especially during the stage of ulceration and free secretion; that it increases the susceptibility of the conjunctiva to take on acute inflammatory reaction; that it may become an endemic disease in crowded institutions; that certain races, especially the Irish, Jews, and Eastern races, are peculiarly liable, while the negro is almost exempt; that it is more common in low-lying regions, and it is said not to occur at an altitude above 1000 feet; and, finally, that there is much evidence to show its dependence upon a specific microörganism, which, however, has not been positively isolated.[1]

Of the numerous applications used in the treatment of this disease the following have met with deserved favor: Strong solutions of bichloride of mercury, sulphate of copper, either in the form of a crystal, or as *lapis divinus*, which consists of alum, nitrate of potassium, and sulphate of copper fused together, and camphor equal to one-fiftieth of the whole added, and the preparation run into a mould to form a stick; nitrate of silver in solutions of varying strength according to the exigencies of each case, or as the mitigated stick, and boroglyceride.

Taking a case in which there is conspicuous lymphoid infiltration of the conjunctiva, but without mucopurulent discharge, and unassociated with much hypertrophy of the papillary layer of the conjunctiva, the lid should be everted, and all portions of the mucous membrane upon which the follicular eruption can be detected carefully touched with a small mop of absorbent cotton previously dipped in

[1] Burnett (THE MEDICAL NEWS, November 22, 1890), quoting Prof. G. C. Kober, states that trachoma has been seen at an altitude of 4700 feet, particularly among Indians.

a solution of bichloride of mercury, 1 to 500. The conjunctiva lining the lids passes to the ball through a somewhat loose reflection of the membrane forming in the upper and lower lids the fornix, or retrotarsal fold. Now sometimes, when the upper lids are everted, this will come into view, but sometimes it will not, and many mistakes are made simply by turning the lids without an endeavor to bring this fold, which is particularly liable to infiltration with the granulations, into prominence. This usually can be accomplished by making the patient roll the eye strongly downward. If this is not sufficient it is better to evert the lid over a spatula and push the fold into view. This little detail deserves attention, as failure to accomplish it successfully means failure to apply the local remedy on the spot where it is most needed. I have many times watched attendants in hospitals making applications which never reached more than the anterior portion of the everted lids, totally failing to come into contact with the transmission fold tucked back and under the crease of the turned lid. If instead of the conspicuous lymphoid infiltration just stated the granulations are more dense, more elevated, and rougher, the strength of the bichloride solution may be increased 1 to 300. At first every other day, and afterward three times a week, is sufficient for this application, and at the same time the eyes should be thoroughly irrigated four times a day or oftener with a tepid solution of the same drug of a strength of 1 to 7000. It requires some judgment to know how often to repeat the stronger application, a safe rule for this and for all instances being the amount of reaction produced, and it is wise never to repeat a severe topical medication while the irritation of a previous application is still pronounced. This treatment, which a few years ago was especially advocated by Staderini, Arnauts, and others, in a great many instances is the most satisfactory of the local applications. It may be used whether pannus is present or not, and I do not believe it is contra-indicated even when ulceration of the cornea complicates the pannus. It is easily seen that the physiological action of the application is twofold. First a powerful germicide is employed in a disease that is believed by many to be of bacterial origin; in the second place a caustic is used, but not of such a character that it destroys tissue to the detriment of the surroundings.

If, during the course of the treatment on inspection of the lids with a *loup*, a precaution it would be wise to exercise before each application, the condition which I described before, quoting from Professor Raehlmann, of ulceration of the softened follicles with extrusion of their contents is observed; or, if the case is in the stage of softening, with swelling of the papillary layer, increased pannus and mucopurulent or purulent discharge, nitrate of silver becomes the more suitable remedy. In most instances a sufficient strength is 10 grains to the ounce of water, applied with an absorbent-cotton mop. Occasionally, the strength may be increased to 15 grains, and under certain circumstances the mitigated stick may be employed. In all cases where strong solutions are used these must be neutralized with common salt, or the excess washed away with plain water. In making the application a distinct white film should form over all portions touched, and the treatment should never be repeated until the tissue thus destroyed and represented by the white film has been shed with the formation of new epithelium. Nitrate of silver, in the first place, is a powerful germicide, and, in the second place, is superficially strong but does not penetrate deeply, because the film of coagulation which it forms prevents its entrance into the subjacent tissues. When the stage of ulceration has been checked by this means, as may be found by ocular inspection and judged by the disappearance of the discharge, the bichloride of mercury treatment or one of the other caustics may be resumed. During the treatment by the application of the silver, made at such intervals as the amount of reaction teaches is wise, scrupulous cleanliness with antiseptic lotions, preferably, I think, bichloride of mercury, but, in the belief of some, saturated solutions of boric acid, should be continued. A remedy with which I have had some success, and which I do not see mentioned in the text-books, namely, hyposulphite of sodium put up with glycerin and water may be tried. At one time I used it quite extensively in the Philadelphia Hospital, and while I could not see any effect in the absorption of the granulations, it seemed to relieve the patients of the intolerable irritation of which they so constantly complained.

When by treatment a case has reached that condition in which the surface of the conjunctiva remains rough, but distinct prominences are wanting, and yellowish and white lines begin to intersect each other between the granular surface; or, in other words, when the early evidences of cicatrization are beginning, sulphate of copper or *lapis divinus* is the best application. It is rather painful but must be faithfully applied exactly in the same manner described with the other remedies, always douching the lids with cold water after its use. In the presence of discharge it does not appear to act as efficaciously as at other times, but in all other stages it is useful, in the belief of many, the most useful local medication. It should be remembered now that we have to deal with a caustic not severe enough to destroy healthy structures, but efficient against granular tissue, whether we believe this to be analogous to the granulation of wounds or

not. It is, moreover, a stimulant and an alterant to the mucous membrane at a time when such actions are most necessary.

During the final stage, as the granulations are gradually disappearing, and the cicatrization becoming more complete with a tendency to dryness, it seems to me that boroglyceride has a twofold action, namely, the absorption of those granulations which still remain and lessening the tendency to the production of a xerotic condition. It may be used in a strength as great as fifty per cent., but twenty per cent. usually will suffice. Many authors look with great favor upon this drug in phases of granular disease other than the one I have just described. During all of these stages of the malady, and no matter what astringent or caustic is employed, scrupulous cleanliness should be maintained by the frequent use of one of the "eye-washes" to which attention has been directed.

Much of the preservation of useful vision depends upon the successful treatment of pannus. If this is mild in character, consisting only of a few vessels in the cornea and slight roughening of the epithelium, it will disappear with the subsidence of the granulations. If it is severe in type and associated with corneal ulceration, treatment specially directed to its cure is required. The question, how much violent pannus contra-indicates the local astringent or caustic which is being applied to the granulations must be decided by observing whether the pannus is aggravated or not by the topical medication. As before stated, it has not seemed to me that bichloride of mercury acts unfavorably, but nitrate of silver and sulphate of copper require watching. During active pannus it is well to reduce the strength of the bichloride of mercury collyrium to 1 to 10,000, or substitute for it boric acid solution. Ulceration of the cornea in the presence of any change in the color of the iris, or of actual iritis, calls for atropine drops, and much relief will be afforded by hot stupes. In the absence of iritic complications eserine is the better drug, and exercises its curative action upon the solution in the continuity of the corneal tissue, and at the same time helps in dissipating the new-formed vascular structure. If the eserine, in a strength of $\frac{1}{6}$ to $\frac{1}{12}$ of a grain to the ounce, causes headache or local irritation, this may be modified by using at night a drop of atropine solution.[1] In other words, the rules for the use of eserine in this complication do not differ from those applicable to corneal ulceration uncomplicated by the presence of granular lids.

I have described old methods and commonly-used drugs, with the exception, perhaps, of the hyposulphite of sodium, the value of which is doubtful, and firmly believe that better results can be obtained with them, medically speaking, than with a host of new remedies that have not stood the test of long experience, provided the three points upon which success depends are observed, namely, complete exposure of the affected area and thorough application of the remedy; selection of the topical medication according to the stage of the disease which is present, and avoidance of unintelligent "routine treatment"; and scrupulous cleanliness by the aid of antiseptic solutions in the intervals between the use of the local caustic and astringent measures.

[1] Excellent advice in regard to the use of eserine in this connection will be found in Dr. W. F. Mittendorf's brochure on "Granular Lids and Contagious Diseases of the Eye."

AN EXPERIMENTAL AND CLINICAL STUDY OF ERGOT.[1]

By JOHN C. HEMMETER, PH.D., M.D.,
OF BALTIMORE, MD.

(Concluded from page 139)

The effect of ergot on blood-pressure. It is under this subject of inquiry that we meet with the most contradictory statements of those who have studied the question. Thus, we are informed by H. C. Wood,[2] H. Kohler,[3] and Eberty[4] that ergot causes an enormous increase in blood-pressure—when no special mention is made I refer, of course, to *arterial* pressure—basing their conclusion on kymographic observations. On the other hand, Boreischa,[5] Herrman,[6] Wernich,[7] and Handelin[8] hold that the blood-pressure is really lowered.

These discrepancies partly find an explanation in the varieties and general differences in the qualities of the ergot that was employed. We have already alluded to the manner in which pharmaceutical products of ergot vary, not only in degree, but also very decidedly in the character of their actions. Kohler[9] compared the action of the ergotin of Wiggers with that of Bonjean, and found wide differences in the character and kind of action between them. Another explanation of the differences of opinion of the authors referred to is that it can be seen from the reports of at least two of those who have stated that ergot causes a reduction in arterial pressure that doses of the drug were used which were too large to produce physiological effects—the doses were toxic and the effects also.

[1] In the first half of this paper (THE MEDICAL NEWS, January 31st, p. 136), the dose of ergotole given at 3.25 should be 0.25 c.c., not 25 c.c., while the doses given at 3.57, 4.30, and 4.38, on page 137, should be 0.5 c.c., not 5 c.c.

[2] Phila. Med. Times, vol. iv. [3] Virch. Archiv, B. lx. p. 384.

[4] Hallenser Diss., 1873, and Schmidt's Jahrb., B. clviii. p. 127.

[5] Arbeiten a. d. Pharmak. Laborat., Moskau, i. 55.

[6] Büchner's Repertor. f. Pharm., 1871.

[7] Virch. Arch., B. lvi. p. 505, and Beiträge z. Geburtsh., Bd. iii., Berlin, 1874.

[8] Schmidt's Jahrb., B. clv. p. 143; also, Dorpat Diss., 1871.

[9] Loc. cit.

Brown-Séquard[1] maintained that the effects of ergot are of two kinds: First, physiological; causing, also, motor spasms and rise of arterial pressure. Second, pathological or toxic, causing vasomotor paralysis and reduction of arterial pressure.

Handelin[2] admits that the fall of pressure was noted after toxic doses.

Dr. Charles L. Holmes[3] found that when ergot was injected into the jugular vein blood-pressure was first lowered and then considerably raised. He attempted to explain this by supposing that the ergot passing to the right side of the heart excites constriction of the bloodvessels of the lungs by locally acting on their muscular walls, and thus by lessening the supply to the aortic (systemic) circulation causes a fall of blood-pressure. But when it reaches the medulla the ergot stimulates the vasomotor centre, producing constriction of the vessels throughout the body, and, consequently, rise of blood-pressure. This view is supported by the fact that, if ergot is injected into the femoral artery, instead of a fall occurring at first, there is a rise incident to a constriction of the vessels in the limb, then a fall as soon as the ergot reaches the lungs, and, at last, a final rise due to systemic contraction of the vessels of centric origin. H. C. Wood[4] has successfully disproved this view in a very instructive paper (see, also, Wood's *Therapeutics*). He found that when ergotin is injected into a vein of a mammal it causes an immediate fall of arterial pressure which is shortly followed by an enormous rise. This is in agreement with Holmes's main statement. On dividing the cord, however (*i. e.*, causing vasomotor paralysis), Wood discovered that ergot no longer produces a rise of arterial pressure. He concludes that the rise of pressure produced by ergot with the spinal cord intact is centric in origin, due to vasomotor spasm. This overthrows the theory of Holmes regarding the local independent constriction of pulmonary arteries by ergot.

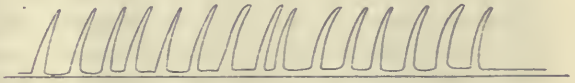
Wood explains the primary fall of pressure by the sudden introduction of a large quantity of ergot into the heart causing momentary paralysis, which passes off as the drug is removed by the circulation. This fall in pressure does not occur when the drug is gradually introduced into the circulation by hypodermic injection; and Wood[5] and Eberty[6] have shown that ergot is a direct cardiac poison.

Before we proceed to state our experiments on this point we may be permitted very briefly to present some older observations concerning the effect of ergot on the number of the heart-beats. It is established beyond a doubt that ergot in physiological doses diminishes the frequency of the pulse, and we quote, on the authority of Professor Stillé, that this fact has been independently noted by Parode, Gibbon, Arnal, Hardy, and Beatty, and also by Professors Bailly and See.[1]

These observations have been made on man, the amount of reduction varying from ten to thirty-five beats per minute. According to Landois,[2] the arterial pressure has been estimated in man to be greatly increased after ergotin injections, the method employed being that of v. Basch. In a neurasthenic patient at present under the writer's observation a fall in the number of pulse-beats from 92 to 48 occurred after taking 2 drachms of fluid extract of ergot for a congestive hemicrania. The pulse was 92 at 10.30 A.M.; at 11 A.M. a teaspoonful of a mixture containing one-half drachm of fluid extract of secale was taken, and repeated every two hours. At 6 P.M. the hemicrania was relieved and the pulse numbered 48 per minute. On the morning of the following day it was 80 per minute, no ergot having been taken during the night. Eberty,[3] also, found that ergot produces slowing of the heart-beats in mammals.

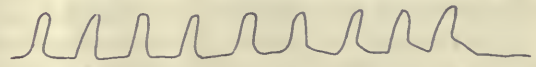
We have performed two experiments in the biological laboratory of the Johns Hopkins University on a frog's heart completely isolated and suspended in a normal salt solution. The ergot was supplied to the sinus venosus from a eudiometer. The pulsations were considerably affected in number and character. We employed the Ludwig and Coats method of isolating the frog's heart; a canula was in the inferior vena cava and one in the aorta; a delicate pen and a fine manometer recording on a

TRACING 1.



Tracing from isolated frog's heart beating under pure serum.

TRACING 2.



Tracing from isolated frog's heart thirty seconds after solution of ergot in serum entered the heart.

TRACING 3.

Tracing from isolated frog's heart three minutes after replacing pure serum by ergotized serum. Taken in same length of time as 1 and 2.

[1] Arch. de Physiol. 1870, iii. p. 434.
[2] Loc. cit.
[3] Arch. de Physiol., t. iii. p. 384, 1870.
[4] Loc. cit.
[5] Loc. cit.
[6] Loc. cit.

[1] Bulletin Thérap., t. lxxviii. p. 435.
[2] Physiologie, p. 171.
[3] Loc. cit.

revolving cylinder, completed the apparatus. On the preceding page will be found tracings taken from the rotating drum, showing the changes in the number and character of the contractions of the isolated frog-heart which occurred within five minutes after the normal circulating medium (pure blood-serum) was replaced by a two-per-cent. solution of ergotole deprived of its alcohol.

Similar, but exaggerated, tracings were obtained when stronger solutions were used. The heart recovered when the ergotized serum was replaced by pure serum. When the heart of the frog is still in connection with the cord and brain the reduction in pulse-beats is more marked: now a two-per-cent. solution of ergotized serum will, in a period varying from three to five minutes, cause the cessation of the heart-pulsations—the heart stops in diastole. In one case, after the heart had ceased beating for thirty seconds (by watch and drum-tracings), it resumed its work after the pneumogastrics were divided and the cord severed by a pair of scissors. When a normal isolated frog's heart is fed by pure serum the sinus venosus, the atrium, the ventricle, and the truncus arteriosus contract in the order in which they have just been named and in rapid succession. When the heart is fed on ergotized serum this succession is slower. But when the heart is still in connection with the nerve-centres the succession is still slower, until only an occasional sluggish, wavy contraction passes over the dilated ventricle very much like a peristalsis. We are justified to draw from these changes in the isolated heart the conclusion that ergot causes a reduction in the number and force of the contractions of the isolated heart of the frog. Ergot, therefore, to a certain extent, acts locally, and is a poison to the muscular fibres of the heart. When the heart is still in connection with the brain and cord, however, the rate of the heart-rhythm and the force of contraction are changed to a greater degree than in the isolated heart. In a frog's heart with its nervous connections intact the rate of the rhythm, the force of contraction, the tonicity, and conduction are more altered than in the isolated organ under the same strength of ergotized serum. It is, therefore, probable that, although ergot acts to some extent locally and directly as a poison to the heart-muscle, its main influence is exerted upon the central nervous system. It was our intention to study the action of ergot on the mammalian heart, isolated according to Professor H. Newell Martin's method, in a manner similar to the one by which the alcohols had been experimented with.[1] But this method of investigation requires much and elaborate apparatus, necessitating greater preparations and more time than was at our disposal. We hope, however, to investigate in the future this particular action of ergot in the manner referred to. We can reach a fair conclusion regarding this action on the isolated mammalian heart by observing the effects of ergot after the cord has been destroyed from the cervical region downward, and the vagi cut.

In dogs and cats whose left or right carotid was connected with a manometer recording on the kymograph, and who received injections of ergotole or fluid extract of secale cornutum into the jugular vein (1 c.c. ergotole in 50 c.c. defibrinated blood), there occurred within from ten to twenty seconds a fall of arterial pressure, followed in from thirty to thirty-five seconds by a rise. In four dogs the fall of pressure was equal to 12.5 mm. of mercury. In the same animals the rise of arterial pressure following immediately upon the fall was equal to 32.5 mm. of mercury. Both of these estimates are averages. The rise is, of course, calculated from the line of normal pressure before the ergotole injection. These dogs were very nearly the same size and weight. In four cats the average rise in arterial pressure was equal to 28.2 mm. of mercury. The normal average arterial pressure in the carotids of the four dogs in question was equal to 15.4 mm. of mercury.

After destruction of the spinal cord from the cervical region downward and section of the vagi in dogs and cats, there is still a reduction of blood-pressure immediately following the injection of ergotole into the jugular vein; but this is not followed by a rise of pressure, although the pressure reaches the normal line after some time. This is in accordance with the results of H. C. Wood and others, who have demonstrated that the rise of arterial pressure under ergot is due to a centric effect of the drug, and that separation of the heart from the central nervous system prevents this rise of pressure.

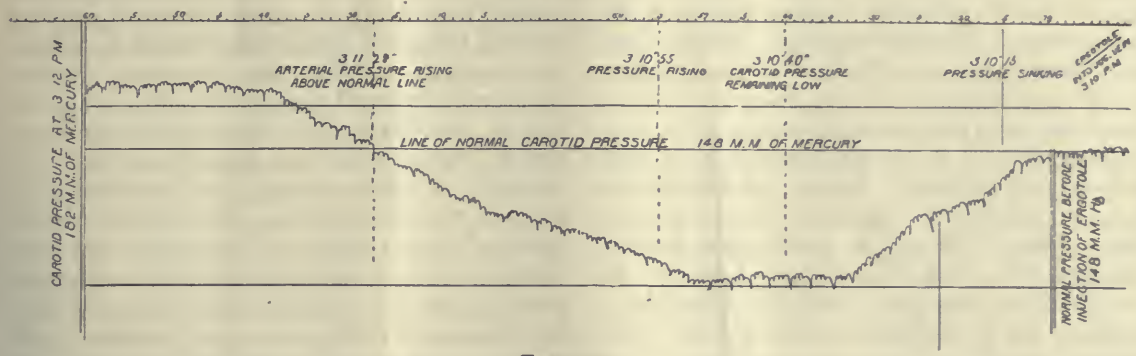
The tracings on the opposite page show the action of ergot just described.

Tracing No. 4 is that of the pulsations of the heart of a dog with spinal cord and vagi intact. The primary reduction and subsequent rise of arterial pressure above the normal line are evident. Tracing No. 6 is that of a dog whose spinal cord has been destroyed and vagi cut, and in which the rate of respiration, shown before destroying these parts, was afterward kept up artificially. Attention is here directed to a reduction of blood-pressure under ergot, which is followed by a slow rise to the normal, but does not exceed it.

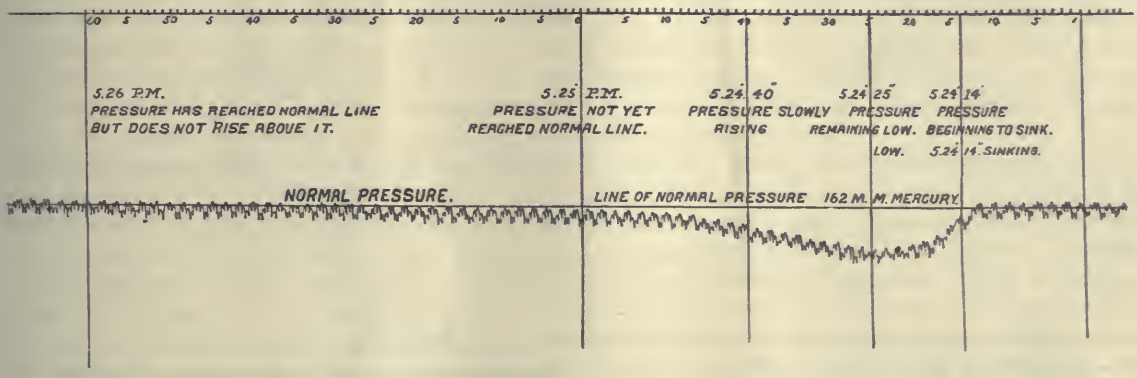
We have assumed with H. C. Wood that this reduction of pressure is caused by the direct action of ergot upon the heart-muscle. It is possible that

[1] On the Comparative Physiological Effects of Certain Members of the Ethylic Alcohol Series (CH_4O—$C_5H_{12}O$) on the Isolated Mammalian Heart: Studies from the Biol. Lab., Johns Hopkins Univ., vol. iv. 5, by J. C. Hemmeter, M.D., etc.

TRACING 4.


CAROTID PRESSURE AT 3.12 P.M. 162 M.M. OF MERCURY
3 11 28" ARTERIAL PRESSURE RISING ABOVE NORMAL LINE
3 10'55" PRESSURE RISING
3 10'40" CAROTID PRESSURE REMAINING LOW
3 10'13" PRESSURE SINKING
ERGOTOLE INJECTED 3.10 P.M.
LINE OF NORMAL CAROTID PRESSURE 148 M.M. OF MERCURY
NORMAL PRESSURE BEFORE INJECTION OF ERGOTOLE 148 M.M. Hg

TRACING 5.


5.26 P.M. PRESSURE HAS REACHED NORMAL LINE BUT DOES NOT RISE ABOVE IT.
5.25 P.M. PRESSURE NOT YET REACHED NORMAL LINE.
5.24'40" PRESSURE SLOWLY RISING
5.24'25" PRESSURE REMAINING LOW.
5.24'14" PRESSURE BEGINNING TO SINK. 5.24'14" SINKING.
NORMAL PRESSURE.
LINE OF NORMAL PRESSURE 162 M.M. MERCURY.

it is due to an action of the poison on the motor and trophic ganglionic nerve-cells of the heart, which have been so accurately studied by Gaskell.[1]

At present we are unable to devise a method to decide upon which of these tissues of the heart the action of ergot in primarily lowering pressure is due. In animals under curare and under the influence of chloroform or ether, the slowing of the pulse-rate is not evident and apparently does not occur. This fact we are unable to explain.

To study the slowing of the pulse-rate the isolated heart of the frog or an unnarcotized and unanæsthetized mammal should be used. In two cats in which the ergotole was slowly and gradually injected hypodermically, the blood-pressure (carotid) rose after four minutes, and there was no primary depression.

Whenever injections are made into the jugular vein, the drug should be diluted with serum or defibrinated blood, strained through sterilized linen, and warmed to the temperature of the animal. Concentrated and cold injections depress the heart's action independently of any drug contained in them.

The deductions then from this part of our investigations are—

1. Ergot reduces the number of pulse-beats per minute.

2. In the isolated frog's heart it reduces the force of the contractions.

3. It exerts a local poisonous influence on the heart of the batrachian as well as on that of the mammal when injected into the jugular vein.

4. Its main action, however, is exercised through the influence of the central nervous system.

5. It raises arterial pressure when injected into the jugular vein of mammals. The rise is preceded by a primary depression due to the local action on the heart.

6. It is impossible at present to decide whether this local action is due to an influence on the heart-muscle or on the cardiac ganglia.

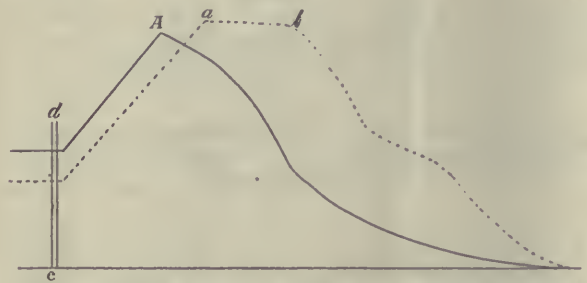
Although it is a matter of some difficulty, from the mere fact that the blood-pressure rises after the administration of a drug, to say whether the effect is due to the action of the drug on the heart or on the arterioles, yet we can come to some general conclusion regarding its mode of action by comparing the alterations which it has produced in the blood-pressure with those which occur in the pulse-rate. (Brunton.)

In the normal condition of an animal, when all the nerves are intact, a rise in the blood-pressure renders the pulse slow by increasing the normal tone of the vagus centre in the medulla, and a fall of blood-pressure quickens the pulse by diminishing the tone. In the normal animal this mechanism tends to keep the blood-pressure more or less con-

[1] Journ. Physiol., vol. iii.; also W. H. Gaskell, Muscarine and Cardiac Electric Changes, Journ. Physiol., vol. viii.; and T. Wesley Mills, Journ. Physiol., vol. vi.

stant. Lauder Brunton has supplied us with some very instructive curves and tracings bearing on this phenomenon. When alterations in pulse-rate and blood-pressure are depicted graphically, so that a rise in one curve indicates a rise in blood-pressure and a rise in the other indicates a quickening of the pulse, the two curves run in *opposite* directions if the alteration in blood-pressure is due to the arterioles, but they run parallel when the alteration is due to the heart. Thus, if the vagi be cut we find that the pulse-rate rises, and in consequence of this the blood-pressure rises also. Here the alteration in pressure is due to the heart, and the two curves are therefore parallel. In atropine-poisoning we have an analogous phenomenon.

TRACING 6.



After the injection of atropine, shown by the vertical line, the vagus is paralyzed, the pulse becomes very rapid, and the blood-pressure rises also. At *A* the vasomotor centre becomes paralyzed, the arterioles dilate, and the pressure falls. From *A* to *B* the action of the heart remains uniform notwithstanding the fall in blood-pressure, but at *B* the heart begins to become paralyzed, the pulse-rate and blood-pressure continue to fall steadily till death.

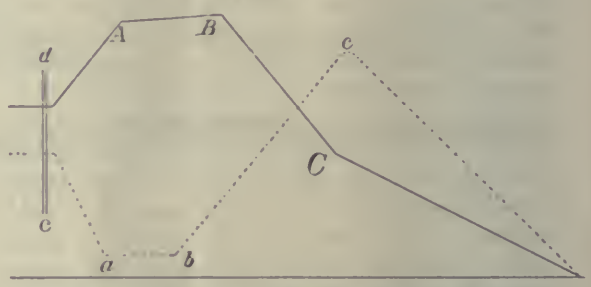
If the vagi be irritated the pulse-rate falls, and in consequence of this the blood-pressure also falls. Here again the alteration is due to the heart, and the two curves are parallel.

If, on the other hand, the arterioles are made to contract, the pressure rises, but the increased pressure stimulates the vagus roots in the medulla, and the pulse-rate falls so that the curves run in opposite directions. This phenomenon is shown in our tracings of the heart-beat and pressure under ergot. It must be borne in mind that the effect of the toxic dose of ergot is exactly the reverse of the physiological action, the latter being mainly a rise of arterial pressure, slow pulse, and general vasomotor spasm, whilst the toxic effects are fall of arterial pressure, rapid pulse, and vasomotor paralysis. These effects are graphically recorded in tracing No. 7.

From these evidences alone, therefore, we have a right to assume that the physiological rise of arterial pressure under ergot is due to its action on the arterioles, not on the heart.

Influence of ergot on body-temperature. It is especially emphasized in the reports of Wright[1] and Kersch[2] concerning the toxic effects of ergot on animals, that a low body-temperature and coldness of the surface were especially noticeable. Tessier, Gross, and Bonjean[3] confirm that this is also the case in birds, chickens, turkeys, and pigeons. A case of ergot-poisoning is reported by Dr. G. S. Oldright,[4] in which, among other symptoms, great coldness was complained of. In a case recorded by Neubert,[5] great coldness of body-surface was especially noted after ergotin-poisoning. In a case reported in the *Toledo Medical and Surgical Journal* the symptom of coldness was very prominent. We have made records of temperature observations on birds (chickens, pigeons, and sparrows) and mammals (rabbits, cats, dogs, and guinea-pigs). In sparrows the hypodermic injection of 0.2 c.c. of ergotole causes a reduction of temperature, which is lowest in forty minutes, when it begins to return to the normal. In sparrows the reduction was observed from 43° C. to 39.5° C. within thirty minutes after the injection. In pigeons a reduction from 40° to 34° in half an hour was observed after injecting 0.5 c.c. of ergotole. The temperature was taken in the cloaca. In rabbits a fall of temperature from 39° to 34.5° C. was observed one hour after injecting 0.5 c.c. of ergotole. The thermometer in case of the mammals was inserted into the rectum. In four dogs a T-shaped canula was inserted into the

TRACING 7.



In this diagram of pulse- and pressure-curves under ergot the alterations are due at first to the action of the drug on the arterioles. The unbroken line indicates blood-pressure, the dotted line indicates the pulse, the vertical double line, *c d*, indicates the time of the injection of ergot. This is followed by contractions of the arterioles and consequent rise of blood-pressure, which stimulates the vagus roots and causes slowness of the pulse. At *a* the pulse is slowest, and continues so until *b*; so far as we have physiological effect. Now at *b* the vagus becomes paralyzed (beginning toxic effect), the pulse grows quicker and the pressure rises still higher between *A* and *B*. At *B* the vasomotor centre becomes paralyzed, the arterioles dilate, pressure falls, although the pulse is rapid at *c*, the heart itself begins to be paralyzed (general toxic effect), its beats become slow and pulse and pressure fall steadily until death. (Schema borrowed from Lauder Brunton.)

[1] Loc. cit. [2] Loc. cit.
[3] Traité de l'ergot de Seigle, Paris, 1885.
[4] Canada Med. Journ., 1870, p. 404.
[5] Journ. für Pharmacodynamick, Bd. 11, p. 433, 1860.

carotid artery, a small thermometer was pushed into the vertical arm of the canula, and held in place by a piece of rubber tubing stripped over it, the thermometer was thus dipping into the blood current. A fall of temperature from 39.5° to 34° was recorded forty minutes after the injection of 1 c.c. of ergotole. In one dog the temperature fell to 30° C. after injecting 2.5 c.c. of ergotole. In the mammals the ergotole was injected into the jugular vein. I know of no thermometric records of human beings who had taken ergot. In the case which was reported in the preceding part of this paper in connection with the depression of the number of heart-beats under ergot, the temperature was 96° F. in the evening after taking 1½ drachms of fluid extract of ergot, the normal temperature of the patient at that time being 98° F. (mouth-temperature). I shall in the clinical portion of this work exhibit the temperature charts of patients suffering from meningitis and others with pneumonia, in which a reduction of 1.5° F. followed the hypodermic injection of ergotole (S. and D.), and rose again in one hour and fifteen minutes after the injection. After the injection was repeated it again sank 2° F. This fall of temperature occurs when the animals experimented on are not under an anæsthetic, and when curare was not used. In these cases the ergot was injected into the rectum and the sphincter ani clamped. It occurred also in animals in which the number of respirations was kept above the normal by artificial respiration. This seems to indicate that the lowering of temperature is not due to a narcotic or anæsthetic which may have been used nor to reduction of the number of respirations. The cause of the low temperature under ergot we have not been able definitely to explain. We are dealing here with a sudden, acute fall of temperature, with which the temperature of the surrounding medium has no connection.

As causes of the fall of temperature under ergot, we might suggest the following factors, viz.:

(*A*) Disturbances in the regulatory mechanisms which control the loss of heat from the body. Under this head one meets with three chief changes that might have a causative influence, viz.:

1. Dilatation of the cutaneous bloodvessels.

2. Reduction of the number of respiratory movements.

3. Reduction of the number of heart-beats and consequent loss of tone in the general circulation.

(*B*) Disturbances in the general metabolic processes.

(*C*) Impairment of the nutritive and oxygenating functions of the blood.

(*D*) Irritation of the cortical heat-centre of Landois and Eulenburg (thermic centre).

Returning to the mechanisms for reducing body-heat, which are mentioned under the first heading, we may consider first, "Dilatation of the cutaneous bloodvessels." It has been assumed, on good grounds, that there is a vasodilator centre in the medulla. This centre must undoubtedly have a potent control over heat-regulation, and would cause increased expenditure of heat by dilating the cutaneous vessels all over the body. As a matter of fact, however, ergot causes a constriction of the cutaneous bloodvessels, and from evidences given in the preceding part of this paper this explanation of the fall of temperature is invalid.

(2) That the low temperature is not caused by a reduction in the number of respirations we know from the fact that the loss of heat occurs in animals in which artificial respirations are kept above the normal number. The temperature of such animals was taken by pushing a thermometer into a T-shaped canula in the carotid.

(3) The third factor under heading 1 comprises reduction of number of systolic contractions and the circulatory changes depending thereon, as causes of the reduction of body-temperature. We know that every cardiac contraction in itself causes heat; it sets the blood in movement and this motion is, for the most part, turned into heat within the body by friction within the bloodvessels. We know that under ergot the cardiac contractions are reduced in number, force, and tonicity, and, therefore, we are justified in concluding that this is at least one causative factor in reducing the temperature. The question might arise whether the reduced action of the heart is a cause or a result of the fall of temperature. As the number of heart-beats are, as a rule, reduced long before the temperature (in most cases of hypodermic injection of ergot within two minutes, the temperature remaining normal for from ten to fifteen minutes more) we may conclude that the slowing of the heart, inasmuch as it precedes the fall of temperature, is a cause, not a result of the loss of heat.

(*B*) Disturbances in metabolism lower the body-temperature. It is more than probable that a drug that affects the general force of the circulation, as ergot does, must necessarily impair the general metabolism. This is also a constant observation in the (trophic) nutritive disturbances of ergotism. The quantity of urea in the urine of animals taking ergot might serve as a key to the degree of metabolism of the body. We hope to be able to publish in the near future a number of experiments on this subject, in which a quantitative reduction of urea in the urine of dogs is demonstrated, the animals having for two days been kept on the same quantity of meat food as in the two days preceding the analysis. We employed the sodium hypobromite method (Knop, Hufner), improved by Dr. J. R. Duggan,[1]

[1] American Chemical Journal.

for quantitative estimation of urea. Ergot, therefore, seems to act like quinine in reducing temperature, and, at the same time, the amount of urea in the urine. There is, however, some doubt as to whether the reduction of the quantity of urea is really an infallible proof of reduced metabolism. We shall consider the reduction in the total amount of liquid urine, which is said by some authors to occur under ergot, in the clinical part of this report to be subsequently published. On the whole, therefore, and judging from its effects on the heart and on the circulation, and from the phenomena of ergotism, we are disposed to believe that ergot diminishes general metabolism, and that this may be a cause of the fall of temperature under its influence.

(*C*) Impairment of the nutritive and oxygenating functions of the histological elements of the blood may by reducing the oxidation processes lower body-temperature. Our efforts to detect any changes in the structure of the red and colorless corpuscles in ergotized animals have been negative. Nevertheless, it is possible that such histological changes do occur in the blood elements. They have been shown to occur under alcohol by Herrman,[1] by Jaillet and Hayem,[2] and by C. H. Schulz.[3] By closer and careful spectroscopic, microscopic, and micro-chemical study such changes may later on be shown to occur as an effect of ergot.

(*D*) Landois and Eulenburg have discovered a cortical heat (thermic) centre in the gray matter of the cerebrum of the dog, near the centres for the flexors and rotators of the anterior extremity, situated near the lateral end of the sulcus cruciatus Local electric stimulation of this centre causes a reduction in the temperature in the extremities of the opposite side of the body. Extirpation of this region causes great rise of temperature in the extremities of the opposite side of the body (confirmed by Hitzig, Bechterew, Wood, and others). It is probable that ergot acts by stimulating this centre. This is a matter which cannot be experimentally established, as section or destruction of the cord, which would be necessary to confine this effect on the brain cortex, causes vasomotor paralysis, dilatation of the vessels, and fall of temperature in itself (Landois).

Under the head of reduced action of the heart under ergot we should have referred to the experiments of Landois and Ammon, who caused an enormous slowing of the heart-beat in rabbits by stimulating the peripheral end of the vagus for one and a half hours. The velocity of the blood-current was also much reduced. At the same time the temperature in the rectum sank from 39° to 34.5° C. Landois thinks that this weakened circulation and reduced heart-action are analogous to a reduction of oxidation processes, so that the causes which we have stated under headings (*B*) and (*C*) are etiologically very closely connected.

When discussing uterine peristalsis we omitted to mention that we made efforts to get graphic records of the uterine contractions by means of a manometer; this method has been successfully used by Schatz in Germany. Thus far our results in this particular have been negative. The cervical canal of rabbits and dogs being too small to allow the introduction of the smallest manometer we could make, this method will be tried with larger animals, and perhaps included in the clinical part of this paper. It would appear to be especially applicable for obtaining graphic records from larger mammalia, perhaps even from the human uterus.

[1] Arch. f. Anat. u. Physiol., 1886, p. 27.
[2] Virchow and Hirsch, Jahrbucher, 1884, p. 369.
[3] Hufeland's Journ. f. prakt. Heilkunde, 1841.

ON THE RELATION OF ECZEMA TO DISTURBANCES OF THE NERVOUS SYSTEM.[1]

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(Concluded from page 133.)

2. NERVOUS AND MENTAL SHOCK.

THE effect of nervous shock and violent emotions, such as grief, anger, etc., in the production of eczema has long been recognized by writers on dermatology, and the well-authenticated instances of this on record are so numerous that it cannot be questioned that this form of nervous disturbance often operates either to produce the disease or to excite an attack in one susceptible to the same. The limits of this article do not permit even a reference to the many statements supporting this proposition by observers of the highest standing, or to the many cases which have been reported. Meyer[2] has collected a large amount of material bearing on this subject, and gives a number of illustrative cases. Leloir[3] has also studied the matter very closely, and relates several very striking cases: a single one of these will serve to illustrate this portion of our subject.

A young woman who had never had any eruption previously except a pustular disease of the scalp at two years of age, but who was very nervous and impressionable, and who was in perfect health, suffered a violent mental shock, as follows: Approaching her home she saw her little child leaning out of the window, and on the point of falling; she cried out, and the child being startled, let go her hold and fell, strangely enough, directly into her arms,

[1] Prepared by special request, to open a discussion on eczema at the Tenth International Medical Congress, Berlin, 1890.
[2] Meyer: De l'Influence des Emotions morales, etc., Paris, 1876.
[3] Leloir: Des Dermatoses par Choc moral. Ann. de Derm., et de Syph., 1887, p. 373.

so that it received no harm. But the mother lost consciousness, and was completely broken down by the shock, and within three days developed a sharp attack of eczema, beginning on the upper extremities and invading much of the surface. Some months afterward she had a second and a third attack, each time following mental disturbance.

The same writer records several similar cases. Tommasoli[1] reports the occurrence of eczema after long grief and sudden shock.

Mental and moral shock occurring in many different manners have been observed to be followed quickly by attacks of eczema; thus Radouan[2] reports that cases occurred in immediate consequence of the siege and Commune of Paris, in 1871, and I myself saw more than one case ascribable to the financial panic in Wall Street, known as "Black Friday," several years ago.

3. Reflex Phenomena: (*a*) of Internal Origin; (*b*) Peripheral.

That reflex irritation is capable of exciting disease in other organs than the skin has long been an established fact, and reflex neuroses are among the most interesting phenomena seen in medical and surgical practice. This causation of eczema has also long been recognized, and clinical illustration in abundance could be cited, were it necessary or did time and space permit.

This reflex stimulation may come from within, or it may result from external irritation of the skin; in either case the eruption excited may cease with the removal of the cause, or may persist indefinitely.

a. Reflex Eczema of Internal Origin.

The simplest, and perhaps the most frequent, instance of the reflex excitation of eczema from an internal cause is that observed in teething infants, in which each accession of a tooth will cause a fresh outbreak of eruption on the cheeks, forehead, chin, or elsewhere. Intestinal irritation by indigestible food may likewise induce attacks of eczema in the same manner as in some subjects it gives rise to urticaria, and Scarenzio[3] narrates two cases in which the eruption of eczema was due to the presence of tapeworm and one in which it depended on the oxyuris.

Danlos[4] has made a very careful study of the relation between the menstrual function and diseases of the skin, and reports a number of cases of eczema in which there was a most remarkable connection between the appearance of the eruption and the occurrence of the menstrual flow; in some instances the accessions of eczema were observed a considerable number of times, and I myself have frequently remarked the same in a number of patients. Danlos also quotes Raciborsky as mentioning having observed this connection, and Tilt[1] speaks of the same. Hebra[2] states that he has seen women in whom each pregnancy was accompanied by an eruption of eczema on the hands. Bangs[3] reports pruritus and eczema of the anal region dependent upon a reflex irritation from urethral stricture.

Richey[4] has recorded a most interesting case in which an erythematous and vesicular eczema appeared on the cheeks of a little girl of ten years each time that she used her eyes to any extent. She suffered from ametropia, and when this was relieved by proper lenses the eruptions ceased to appear, in spite of great use of the eyes. I have recently had under my care a most striking case in a lady aged about fifty years, in whom attempts to use the eyes had repeatedly precipitated a severe attack of eczema beginning on the eyelids; this occurred many times before I saw her, and happened a number of times under my own observation. I have seen several other striking instances more or less similar, and oculists have mentioned to me that the same was not very uncommon in their experience. Juler[5] has treated of the reflex origin of eczema in connection with eye troubles.

b. Reflex Eczema of Peripheral Origin.

Although it undoubtedly happens that external irritants may and do produce an eruption of eczema in a reflex manner, the clinical evidence of this has not been as fully reported as that with reference to other portions of our subject. The instance reported by Kroll[6] is, however, very striking:

A woman, thirty-nine years of age, received a severe scald of the right cheek, followed by cicatrization. Under treatment by collodion a severe eczema developed on the cheek, followed by vesicles on the fingers, hand, and arm of the same side. Shortly after eczema appeared on the left cheek, and then on the left hand and arm.

It was thought that the eruption developed on the extremity through a reflex irritation from the auricularis magnus, by means of the communication of the cervical with the brachial plexus. This is further confirmed by Tidenat,[7] who describes persis-

[1] Tommasoli: Monatsh. für Prac. Dermat., 1886, p. 432.
[2] Radouan: Étude théor. et prat. sur l'Eczema; Thèse de Paris, 1875, p. 41.
[3] Scarenzio: Quoted in Viertelj. für Derm. und Syph., xvii. p. 315.
[4] Danlos: Étude sur la Menstruation, etc. Paris, 1874.

[1] Tilt: The Change of Life, p. 175.
[2] F. von Hebra: Loc cit, p. 457.
[3] Bangs: Neuroses of the Genito-urinary System, N. Y. Med. Monthly, 1885.
[4] Richey: Archives of Ophthalmology, xiii. 1, 1884.
[5] Juler: Lancet, 1884.
[6] Kroll: Cited in Viertelj. für Derm. und Syph, xv. p. 612.
[7] Tidenat: Des gelures. Thèse d'agrégation. Paris, 1880.

tent eczema as a not infrequent complication of old burns.

The development of patches of eczema upon distant portions of the body is readily explained in many instances by a reflex irritation from some local patch, which may have been excited by a local cause. The later symmetrical development of acute vesicular eczema on a corresponding opposite portion of the body, as one hand or foot after the other, can be satisfactorily explained by reflex action through the cord. It is well known that in scabies there is often much eruption in parts and localities where the insect has not been present; these eruptions are often explained as due solely to scratching; but, with the reflex pruritus which has led to the scratching, there is also some capillary disturbance; and relief from the itching is not obtained until the surface is torn and more or less exudate has reached the surface. In a recent paper upon pruritus the present writer[1] endeavored to show from personal observations the reflex nature of much of the itching on the surface, and if the phenomena of itching are carefully studied, on the normal or diseased skin, it will be readily seen how almost invariably a local irritation of one part will be attended with or followed by a greater or less degree of sensation in some part near by or quite distant.

4. NEUROSES: (*a*) STRUCTURAL; (*b*) FUNCTIONAL.

Closely connected with the preceding is the group of cases in which eczema has been observed to accompany, follow, or be dependent upon disease or disturbance of nerve-trunks. These may be divided into two classes, first, according as there is actual disease or damage to the nerve, and second, where no nerve lesion is known, but only functional disturbance manifested.

a. Eczema from Structural Neurosis.

The first, and perhaps clearest, evidence of this is that furnished in connection with wounds and injuries of nerve-trunks, as studied especially by Mitchell, Moorhouse, and Keen, during the late civil war in America. Mitchell[2] speaks of eczema as of frequent occurrence in those suffering from nerve injury, principally from gunshot wounds; Duménil[3] is quoted by Leloir as reporting eczema dependent upon alterations of peripheral nerves, which he describes; the same writer quotes Duplay[4] as reporting eczema secondary to traumatic neuritis in stumps after amputation. Finally, Arnozan[1] relates the case of a man sixty years old, who had never had eczema, in whom the eruption followed soon after a violent contusion of the shoulder; there were violent pains along the arm, and forty hours after the accident eczema developed along the track of the radial nerve.

b. Eczema from Functional Neurosis.

Neuralgia, like neurasthenia, is a rather indefinite term, representing an affection or condition which may be said to have little or no established pathology, but a very large clinical history; and any very definite connection, causative or otherwise, with eczema, would be difficult to demonstrate with any great certainty. But everyone who carefully studies large numbers of cases of eczema in private practice will readily find many instances among a certain class of cases with eczema, where it would seem probable that the eruption and the neurotic condition called neuralgia were in some way connected. Cavafy[2] relates a case in which a severe trigeminal neuralgia of the left side suddenly ceased, and nine days later that side of the face became red and swollen, and developed a vesicular eczema. Leloir[3] quotes Eulenburg to the same effect, and narrates two cases, communicated by Lailler, in one of which the eczema alternated with the migraine. I, myself, have seen many patients with eczema in whom neuralgia was undoubtedly a factor of some importance in the case, although the etiological relations between the two are difficult to determine. The following striking case was observed during some months:

Mrs. B., a widow, aged thirty years, was thrown on her own resources for the support of herself and mother. She took to literary pursuits, and became editor of a magazine requiring a large amount of personal work, she using the pen almost constantly. After some months she began to suffer from neuralgia of the right arm, and at the same time a papular eczema developed on the back of the arm and the radial side of the forearm, attended with most intense itching. When she ceased for a time from her great use of the hand the neuralgic pain lessened and the eruption diminished, but a return to her severe application would cause a return of both. This continued for some time, and treatment for either condition seemed to have very little effect while the arduous labors were persisted in, but yielded quite readily when work was relaxed or suspended.

Other more or less similar cases could also be related.

[1] Bulkley: "Clinical Notes on Pruritus," Journ. of Cutan. and Ven. Dis., 1889.

[2] S. Weir Mitchell: Injuries of the Nerves. Phila., p. 171.

[3] Duménil: Gaz. Hebdom., 1866, p. 88. (Leloir, loc. cit., p. 156.)

[4] Duplay: "Erupt. Eczem. sur les, etc." Union Méd., 1879. Leloir, loc. cit., p. 156.

[1] Arnozan: Des Lesions troph. consec, etc. Paris, 1880, p. 124.

[2] Cavafy: Brit. Med. Journ., 1880, July 24 (Ann. de Dermat., 1881, p. 150).

[3] Leloir, loc. cit, p. 157.

5. Encephalopathy and Myelopathy.

Eczema induced by disease of the brain and spinal cord must be very rare, if, indeed, it really ever occurs, as relatively few allusions to the subject can be found in literature. Meyer[1] quotes Fèvre to the effect that eczema is frequent among the insane, and the latter considers the skin alteration a trophic disorder, dependent upon modifications in the cerebro-spinal axis. He has observed that when the mental condition is obstinate the eruption also is rebellious, but that when the latter is readily cured there is reason for a more favorable prognosis for the mental derangement. Nicol[2] has also noted eczema as common among the insane. No record has been found of eczema connected with inflammatory or neoplastic disease of the brain.

A number of observers have reported eczema in connection with diseases of the spinal cord, but the evidence of this relationship is not very strong. Charcot[3] speaks of papular or lichenoid eruptions which he has often observed along the track of painful nerves in ataxia, and which he referred to a common cause with the nerve lesion, and Rendu[4] quotes Charcot as describing vesicular lesions in connection with acute and chronic myelitis. Vulpian[5] describes a papular eruption, attended with intolerable itching, which appeared at the end of attacks of fulgurating pains in a woman with ataxia, and Purdon[6] reports three cases of ataxia, in which the patient suffered from eczema of the lower extremities during the later period of the disease. Finally, Weir Mitchell[7] and Couyba[8] record eczema after wounds of the medulla.

It will be seen, however, that the positive evidence of eczema wholly dependent upon cerebral or spinal disease, is small, both actually and relatively, when compared to other nervous connections, and that this is a field in which we require further observation.

Having now reviewed, as far as possible, the anatomical, pathological, and clinical evidence accessible relating to the connection between eczema and disturbances or disease of the nervous system, let us briefly examine as to how far it goes to prove a real nerve pathology of eczema.

Before we can rightly understand the part played by the nervous system in the production of eczema, we must first clearly recognize and define what skin condition it is that we shall call eczema, for whose etiology we are searching.

First, then, we must insist upon the entire separation of *dermatitis*, pure and simple, from *eczema*.

We all know that the skin may become inflamed in various degrees from a great variety of local causes, from the mildest effect of heat or cold or mechanical action, or from various chemical and vegetable irritants, up to the most severe and destructive inflammation of its entire structure. To these different forms and degrees of skin inflammation from purely local causes, various names have been given, partly to describe the condition present and partly to express the cause. In this group belong the animal and vegetable parasitic diseases, which are to be entirely separated from the disease process long called eczema, and recognized by its clinical appearances, as will be mentioned later. All these conditions, depending wholly on local agencies, tend to pass away when the irritating cause is removed or has ceased to act: for the skin, equally with other structures of the body, has a strong tendency to return to a state of health, unless prevented by internal or external causes.

A single word must be said here in regard to an eruption or condition of the skin, to which much attention has been called of late, namely, the *seborrhœic eczema* of my esteemed friend Dr. Unna. I say "a single word," for any attempt to discuss the subject fully would carry me far beyond the proper limits of this paper. I can only say that I take issue entirely with Dr. Unna in regard to the matter referred to, and I say this after much thought, and after having seen many cases to which this diagnosis had been given by those who know well what is intended by seborrhœic eczema; I have followed the matter carefully almost from the very first appearance of Dr. Unna's publications. The most typical cases, which are mainly seen on the chest and back, I still regard as seborrhœa, while many of the less marked cases are readily recognized as other ordinary forms of eczema. Whether there is a parasite in seborrhœa I will not attempt to affirm or deny, but I cannot agree to burden eczema with this cutaneous condition, the clinical appearance, course, and treatment of which, according to my experience, differ so entirely from those which belong to eczema proper.

I claim, therefore, that if this condition, called seborrhœic eczema, is a local affair, due entirely to a parasite, and cured by anti-parasitic treatment, it is, like the other conditions alluded to, a dermatitis, and not eczema in the truest sense of the term; we but confuse our subject and increase the difficulties of study and treatment, if we retain as eczema an eruption of a distinct local nature.

[1] Meyer, loc. cit., p. 30.
[2] Nicol: Journ. Cutan. Med., London, iv. p. 197.
[3] Charcot, cited by Schwimmer, loc. cit., p. 122.
[4] Rendu: Annales de Dermat. et de Syph., 1874–5, vol. vi. p. 205.
[5] Vulpian: Leçons sur. les Mal. de la Moelle, 1877, p. 338.
[6] Purdon: Journ. Cutan. Med., London, iv. p. 229.
[7] Mitchell, Moorhouse, and Keen.
[8] Couyba: Des "Troubles trophiques consequetives, etc." Thèse de Paris, 1871.

Excluding, then, all doubtful conditions, and taking eczema as we all know it, we must recognize the three main forms into which it has long been divided clinically:

1. Acute, newly-developing, or recurrent eruptions in erythematous, papular, and vesicular forms, with burning, itching, etc.

2. Chronic patches of diseased skin, with thickening and itching, tending to remain long quiescent, unless irritated or removed by treatment.

3. Between these two we have the subacute form, more or less extensive, where, with chronic patches, there are also exacerbations, to a greater or less degree acute in character.

Taking, now, eczema, as here recognized, we may study it according to the three elements of causation, as mentioned in the topic proposed for discussion:

1. Can nerve-disturbance cause eczema *de novo*, or does it only produce or excite an eruption in a previously susceptible subject? and in what manner does it act?

2. How far does a diathesis predispose to or cause eczema?

3. What part, if any, is played by parasites?

In the light of the many observations which have been made on all sides, some of which have been here quoted, there can be no question whatever that an eruption of eczema may be induced, in a person who has never before experienced the same, by certain conditions or disturbances of the nervous system; in other words, we answer that nerve-influence can produce the disease *de novo;* and it is clear also that in those who are susceptible thereto the eruption may be prolonged or fresh outbreaks caused by neurotic agencies.

In regard to the manner of operation, exactly how the nerve-disturbance produces its effect upon the skin, we are not as yet in a position to speak definitely; much more light, both clinical and pathological, is required before the matter can be considered to be definitely determined.

Looking back over the clinical part of this essay we find that there is so little evidence connecting eczema with disease of the brain or spinal cord that we may practically exclude them from our consideration. Our study, therefore, narrows itself down to the terminal and conducting nerves and their ganglia, and to the sympathetic nervous system; for the influence of the nervous system certainly must be invoked to explain the phenomena briefly quoted from many observers.

Considering the branches into which we divided our subject in a reverse order, we have seen that eczema has been observed:

1. In connection with or following mechanical injuries to conducting nerves.

2. In connection with or alternating with functional disorder of conducting nerves.

3. In connection with or following peripheral reflex irritation.

4. In connection with or following internal reflex irritation.

5: In connection with or following nervous or mental shock.

6. In connection with or following upon, once or repeatedly, neurasthenia or nerve-exhaustion.

Time and space fail us to investigate or even allude to and explain the various theories which have been advanced in regard to the *modus operandi* of the nerve-influence, and these have been so well elaborated by Leloir[1] in his excellent monograph already referred to, that it would seem useless to go over the ground again. It would appear best, therefore, with him to adopt the theory proposed by Vulpian as the most plausible one, namely, that of *a diminution, more or less complete, of the trophic influence exercised by the nervous system upon the tissues.* This diminution of the trophic influence may take place, either directly (by destruction of nervous fibres or trophic centres) or in a reflex manner (by a diminution of the action of the trophic centres under the influence of centripetal excitation of these centres).

There is no question that in eczema we have also a great implication of the vasomotor system, as is constantly seen in the congestive element of the eruption; the same is also shown by the great value of ergot in certain cases, to which Lewin and Witzel[2] have called particular attention, and of which I could furnish abundant personal evidence. But, as far as has been observed, mere dilatation or contraction of the bloodvessels does not result in the more permanent changes of the skin which are found in eczema; the angio-neurotic eruptions, such as roseola, erythema, and urticaria, do not tend to pass into the chronic and infiltrated condition of the skin which is seen in eczema. While, therefore, the nerves controlling the blood-supply are also affected in eczema, the real cause of the structural changes found in the skin must be charged to the nerves presiding over nutrition and repair, and with Schwimmer[3] we must place eczema as a trophoneurosis.

What this trophic nerve-element is we cannot now say, but it is not at all necessary to believe with Samuel[4] in the existence of any special set of trophic nerves, as they have never yet been demonstrated; but clinically we know that such an action must

[1] Leloir: Recherches clin. etc., sur les Aff. cutan. d'Origine Nerveuse. Paris, 1882, p. 179.

[2] Witzel: Ueber den nervosen Character des Eczems, etc. Berlin, 1879.

[3] Schwimmer: Loc. cit., p. 121.

[4] Samuel: Die trophischen Nerven. Leipzig, 1868.

exist, even if we cannot demonstrate exactly the nerves which preside over nutrition.

The sympathetic nervous system has undoubtedly much to do with a genesis of eczema, but what share has not yet been demonstrated. The study of the influence of the sympathetic on disease is most difficult, and relatively little has been accomplished in the direction of showing actual skin lesions due to primary disease or derangement of these nerves or their ganglia. The only pathological evidence in regard to eczema is the case reported by Marcacci,[1] which has been so often quoted that it is remarkable that other observations have not been made in this line. In Marcacci's case the man, aged seventy years, having an acute, generalized eczema, died of right pneumonia. At the autopsy "the upper cervical ganglia of the sympathetic, as also of the cœliac, were visibly hyperæmic to the naked eye, and on microscopic section the changes were even much more evident." Moreover, when immersed in distilled water, acetic acid, and glycerin, the specimens showed the presence of a large number of nuclei; the nerve-cells, diminished by the lateral pressure of the nuclear mass, were turbid in their protoplasm, and marked pigmentation was found in the intercellular spaces.

This single observation is certainly far from being satisfactory proof that the sympathetic nervous system is involved in eczema, although supported by clinical evidence, and by the therapeutical proof found in the benefit obtained in many cases of obstinate eczema from galvanization of the sympathetic, or central galvanization, as already mentioned. For, still, it is by no means certain whether the hyperæmic and other changes found in the sympathetic ganglia in this case were not connected with the pneumonia quite as much as with the eczema. Further researches in this direction are urgently needed.

It would be interesting, did time permit, to study now somewhat in regard to the actual manner in which various nerve conditions operate to cause eczema, in certain cases. The question arises, How far the trophic and angio-neurotic phenomena are due to an exaggerated activity in certain nerves or ganglia, spoken of as the *lower centres*, or how far they are due to a want of control over the processes of life and health, as exercised by the *higher nervous level* or *centre?* We all know, from experience, that local or other agencies which at one time will cause the appearance of eczema in a patient, will at another time not be followed by such a result, and we very often recognize that it is because at that particular time the person is suffering from a depressed condition of health; or, in other words, that there is a lowered state of general vitality. With this there is a lowered nervous state, the patient is less under self-control, and, if a young female, may give way to hysterical manifestations. Now, in just the same manner the higher nervous centres, which undoubtedly control, to a greater or less extent, the lower centres which have to do with animal life, nutrition, assimilation, and metabolic processes, when they become weakened by prolonged strain or nervous or mental shock, they lose control of the organic processes, and errors occur which we call disease in various organs.

Thus we can explain how a local agency which in one patient, or at one time, will produce only a local dermatitis, may, in another patient or at another time, excite an inflammatory condition of the skin which will be continued in the form of eczema. Want of time and space forbids our pursuing this interesting study further, and we must here rest our case.

Having seen, now, that the nervous system plays a most important part in the *rôle* of the production of eczema, we can better understand how other elements, such as various digestive and other derangements, can act as real basic causes of the disease. But the consideration of this aspect of the question would lead us far beyond the limits proper for the present occasion, and I must leave these, with the question of diathesis and parasitic influence, to others who will follow in the discussion.

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[1] Marcacci: Gior. Ital. della Mal. ven. e della Pelle, 1878, p. 171.

CLINICAL MEMORANDA.

SURGICAL.

A Case of Traumatic Tetanus.—The patient was a muscular negro, aged thirty-two years, who stepped upon a nail, which entered the plantar surface of the foot near the metatarso-phalangeal articulation of the little toe. The wound suppurated and was very painful, but finally healed, leaving a tender scar. Fifteen days after the injury, sharp pain was felt in the cicatrix extending to the thigh along the course of the great sciatic nerve, and finally to the spinal cord. The patient complained of severe pain in the back of his neck and head, and also of a sensation of oppression in the thorax. About twenty-four hours after the pain was first felt in the scar, the muscles of his jaws became rigid, sore, and painful, and his mouth could be opened with difficulty only. In three more days the mouth could not be opened, and all the muscles of the body and extremities became rigid. Opisthotonus was very marked.

When I first saw the patient, on the fourth day of the tetanic spasms I ordered calomel 10 grains, tartar emetic ⅓ grain, and croton oil 3 drops; followed by chloral and bromide of potassium of each 25 grains every two hours. The latter drugs were given throughout the course of the disease. On every third day I gave 3 drops of croton oil, which produced three or four watery stools in twenty-four hours. I made a crucial

incision in the scar, producing a venous hæmorrhage, then dressed the wound with oil of turpentine. When the heart showed signs of weakness I gave 25 drops of tincture of digitalis and 1 ounce of whiskey four times daily. When the temperature rose above 103° F., I gave 12 grains of quinine, not only for its antipyretic effect but for the antizymotic action. The patient's diet was exclusively liquid. On the twelfth day he could open his mouth. He had only two general convulsions after the bromide and chloral were first given, and on the twentieth day he was out of bed.

As this is the second case of traumatic tetanus I have successfully treated in this manner, the method seems worth noticing.

W. R. JACKSON, M.D.,
Visiting Physician to the City Hospital,
Mobile, Alabama.

THERAPEUTICAL.

Hints on the Treatment of Chronic Bronchial Catarrh or "Winter Cough."—I wish to call attention to the use of some old, but neglected, remedies which I have used during the past four years with great satisfaction in the treatment of chronic bronchitis.

Antimonium sulphuratum or "golden sulphuret of antimony," United States Dispensatory, p. 208, fifteenth edition, gives the best results in cases in which the expectoration has assumed a yellow or greenish-yellow color and is profuse, almost suffocative in quantity. It should be given triturated with milk sugar in doses of from $\frac{1}{30}$ to $\frac{1}{30}$ of a grain after meals and at bedtime; it may be administered with other remedies to quiet cough and allay fever, and as most cases of chronic bronchitis with profuse secretion have slight fever, I usually prescribe tincture of aconite $\frac{1}{5}$ minim, tincture of bryonia $\frac{1}{10}$ minim, and tincture of belladonna $\frac{1}{10}$ minim, and if cough is troublesome, either codeine or chlorodyne is given on sugar at bedtime.

After the expectoration becomes thick, bluish-white and tenacious—like boiled starch—and causes gagging, bichromate of potassium in doses of from $\frac{1}{30}$ to $\frac{1}{30}$ grain may take the place of the antimony salt, or may be given with it.

This method of treament will give excellent results in many cases of phthisis.

THEODORE G. DAVIS, M.D.
BRIDGETON, N. J.

MEDICAL PROGRESS.

A Fish-bone Impacted in the Rectum.—DR. HENRY LEE (*Lancet*, January 17, 1891) reports the case of a man who had been treated for about two and a half years for dysentery. On examining the rectum, Dr. Lee discovered a fish-bone about two and one-half inches long impacted across the bowel about two inches from the anus. The bone was removed through a speculum by means of a pair of long forceps. The dysenteric symptoms, from which the patient was suffering, immediately ceased.

Nephrolithotomy after Nephrectomy.—MR. CLEMENT LUCAS (*Lancet*, January 17, 1891) reports a case of nephrolithotomy in a woman from whom three months previously the right kidney, containing a mass of stones, had been removed. The nephrolithotomy was performed on the fifth day of total suppression of urine, with violent pain radiating from the left lumbar region. Cutting down on the kidney, Mr. Lucas discovered a conical stone about three-fourths of an inch long, acting as a ball-valve to the opening of the ureter. For the first twelve days after the operation the urine passed through the wound only, but after the nineteenth day it passed entirely by the natural channel. Healing was complete ten weeks after the operation. The operation was performed in 1885, and the patient has remained in excellent health.

Sodium Chloride in Anæmia.—DR. E. FRANK (*Prager medicinische Wochenschrift*) reports two cases of acute anæmia due to hæmorrhage, in which death seemed unavoidable, but which improved rapidly under subcutaneous injections of a sterilized sodium chloride solution (six-tenths of one per cent). In one case 500 grammes, in the other case 400 grammes, were injected inside of one hour.

Traumatic Ciliary Neuralgia.—EVERBASH reports an interesting case of traumatic ciliary neuralgia, caused by the point of a needle penetrating the eyeball at the sclero-corneal junction. The injury healed promptly, and left no objective sign to account for the subjective symptoms. He found the pupil slightly dilated and irregular, there being a projection opposite the wound, which disappeared under atropine. This indicated in all probability a circumscribed detachment of the iris from its ciliary insertion. The neuralgia may have resulted from primary injury of a nerve-filament or from pressure on the latter through distortion by scar-formation. By the galvano-cautery the focus of irritation was removed, after which the subjective symptoms disappeared promptly.—*Münchener medicinische Wochenschrift*, No. 51, 1890.

A Mixture for Irritability of the Bladder.—In the *Gazette de Gynécologie* the following prescription for irritability of the bladder is given:

℞.—Benzoic acid	15	grains.
Borax	1½	drachms.
Water	5	ounces.—M.

Dose, one tablespoonful three times a day. The mixture produces a decrease in the frequency of urination and lessens the irritability of the walls of the bladder, which are in an abnormal state owing to the phosphates in the urine.

The Treatment of Metrorrhagia.—The *Gazette de Gynécologie* quotes the following prescription:

℞.—Ergotin	2½	drachms.
Glycerin	5	"
Salicylic acid	30	grains.
Distilled water	2½	ounces.

A tablespoonful of this mixture is to be added to 3 tablespoonfuls of water and injected into the rectum once a day after the bowel has been emptied. At the same time it is well to give the following pill:

℞.—Hydrochlorate of hydrastinine, 1 grain.
Powdered liqorice, a sufficient quantity.
Make into 10 pills, one of which should be given each day. If the flow is profuse, two pills may be given.

Local Applications of Boric Acid to Relieve Constipation.—According to the *London Medical Recorder*, DR. PLATAN, of Berlin, suggests the insufflation into the rectum of a pinch of boric acid, to relieve constipation. The results are said to be excellent even in severe cases in which mechanical measures have failed.

Treatment of Chilblains.—BROCQ and BESNIER use the following treatment for chilblains: When the chilblains have advanced to the point of suppuration, they first wash the affected parts perfectly clean, and then use the following application:

℞.—Alum, Borax . . . . . 1 drachm.
Rose-water . . . . . 8 ounces.

The feet are bathed with this or a solution of nitrate of silver, 1 part to 150, is painted over the affected parts. Finally, if the diseased condition is slow in healing and needs stimulation, they employ camphorated spirit 2½ ounces, tincture of cantharides from ½ to 1 drachm. Where the ulceration is very severe and sufficient to produce a slough, the parts should be thoroughly washed daily with a solution of bichloride of mercury, 1 to 2000, or with solutions of chloride of sodium.

The Sedative Effects of Atropine and Duboisine.—After a large number of observations upon the effects of atropine and duboisine, DR. N. OSTERMAYER (*Internationale klinische Rundschau*, November 9, 1890) reaches the following conclusions:

1. In cases of mental disorder atropine in doses of from $\frac{1}{64}$ to $\frac{1}{32}$ grain is undoubtedly sedative, and indirectly is also hypnotic, but cannot be recommended for general use.

2. After the continued employment of the drug the good effects are no longer produced.

3. Bad effects do not follow the use of the drug except, in some cases, slight vomiting and diarrhœa.

4. Atropine is often effective in cases which are not influenced by morphine or hyoscine.

Concerning the sulphate of duboisine, Dr. Ostermayer concludes:

1. That in irritative mental disease the effects of the drug are sure and develop rapidly, and somewhat resemble those of hyoscine, the effects appearing in from ten to fifteen minutes after the drug has been given hypodermically.

2. It has distinct hypnotic effects, sleep usually following in from twenty to thirty minutes after the administration.

In conditions of great excitement the author employed doses of from $\frac{1}{32}$ to $\frac{1}{24}$ grain, and in no case were bad effects observed.

3. After the long-continued use of the drug the effects are much less marked.

The Chloral Antipyrines.—According to GERMAIN SÉE, the monochloral and bichloral antipyrine are similar in their action to chloral, differing, however, from the latter in being less depressing to the heart and circulation. The dose of each varies from 2 to 3 grammes. They should not be used in cardiac disease with failing compensation, since they augment the blood-stasis, and therefore increase the albuminuria. They may be administered, however, with impunity as hypnotics in aortic disease in the period of compensation. They have no action upon dyspnœa, either cardiac or pulmonary. In some cases they slightly increase the secretion of urine. Compared to sulphonal and the hypnotics of the chloral series (chloralimid and chloralamid), they are much inferior on account of their depressing effect upon the vessels and heart, though this depressing action is less marked than is that of chloral.—*La Médecine Moderne*, December 18, 1890.

Retained Fœtus.—In the *Dublin Journal of Medical Science* for January, 1891, is given the history of a case reported by MACAN to the Royal Academy of Medicine in Ireland. The fœtus had been retained for three months after the termination of the normal period of pregnancy. Four years previously the woman had had a similar experience, and carried a fœtus for eleven months. Dr. Macan cross-examined her carefully as to the case now submitted, but got no history indicating that labor came on at the end of the ninth month and then ceased. She said she had no pains until the morning on which she was delivered, and had been in good health. About the present retention she consulted Dr. O'Brien, of Tipperary, who was acquainted with her previous history. In her former delivery her vagina was a good deal torn and became enlarged afterward. Dr. O'Brien recognized that the child had been dead for three months and that the vagina was closed, and therefore thought that ordinary delivery would be more dangerous than that by abdominal section, and believed that Porro's operation should be resorted to in order to remove the child and to prevent the accident from occurring again. When she came to Dr. Macan there was nothing but the history of the eleven months' pregnancy. He carefully examined her under ether. She had a profuse secretion of milk in the breasts; and he could feel through the vaginal walls a hard, irregular tumor, but nothing that resembled a collapsed head—for if the child had been then dead two months there should have been considerable softening of the head—so that at first he was under the impression that she had a fibroid tumor. He went to the country, and after his return he received a message by telephone that she was in hard labor with strong pains. During the extra three months she had had good health, but in the last week she had a feeling of great lassitude. On vaginal examination he found that the vault of her vagina was funnel-shaped, and he could not feel its attachments to the uterus. He put her under ether, and inserted a catheter, which brought away some decomposing blood. He then tried to break through the thin partition of the vagina with his finger and felt the hard bone of the child's head. He dilated the vagina with Barnes's bags. The extraction of the child was a very difficult process and occupied four and a half hours. Since the operation she has done very well, although she has had a rise of temperature to 101°, and washing out the uterus was attended with a fœtid smell not of the ordinary kind. There must have been some abnormality

of the muscles of the uterus, or else she would not have had these delayed labors. The placenta was an extremely interesting structure and was flattened from the tremendous compression it had undergone. There have undoubtedly been cases in which the child was retained for an indefinite time, even though the cavity of the uterus had a normal opening, but Dr. Macan said that he had never met with a case like the present.

Antiseptic Precautions in the Management of Newborn Children. — Epstein (*Jahrbücher f. Kinderheilkunde*) writes that our knowledge of infection and infectious diseases has made it possible to diminish greatly, by means of prophylactic measures, the mortality from septic diseases in newborn infants. At this period of life the diagnosis of septicæmia is not easy; fever and chills may be absent and all subjective symptoms are wanting. Intestinal catarrh and marked debility are common accompaniments of the disease. Cases in which septicæmia is acquired before or during birth are very rare. The most common avenue of entrance for septic matter is the navel, although others are possible, the danger of infection being, of course, greatest during the first few days of life, when the stump of the cord is an open wound.

Infection by way of the mouth may occur, as in cases of diphtheria, septic croup, and aphthæ. It may also be caused by the aspiration of abnormal amniotic fluid, and by contact with the diseased genitals of the mother. Prophylaxis must begin with the most careful treatment of the umbilical cord. The stump should be cleaned and surrounded with a carbolized gauze dressing, the object being to produce mummification as soon as possible, and moist dressings should be avoided. A free access of air to the stump will hasten the process of drying and healing.

The physician and nurse must first attend to the infant and then to the mother, the hands being scrupulously clean, especially while handling the cord. For the first baths of the infant a harmless antiseptic solution, such as one containing the permanganate of potassium, should be used. Repeated washing and scouring of the mouth must be avoided, as such manipulations are frequently the cause of thrush. A dirty finger must not be placed in the mouth of an infant to remove secretions, nor should a dirty instrument be used, if the child is born asphyxiated, to aid in resuscitation. The instillation of a drop of a two-per-cent. solution of nitrate of silver into each eye of newborn infants should be carried out in both private and hospital practice as a preventive of ophthalmia. With reference to artificial food, the use of sterilized milk is deemed of the utmost importance, but it must not be considered that this is a perfect substitute for mother's milk.—*Archives of Pediatrics*, January, 1891.

Treatment of Snake-bites.—In the *British Medical Journal*, January 3, 1891, Dr. T. Lauder Brunton briefly reviews the physiology of death from snake-bites, and makes some possibly useful suggestions in regard to treatment. As is well-known, death from the bites of rattlesnakes and cobras is by respiratory paralysis. Laboratory experiments have shown that animals poisoned by the cobra virus may be resuscitated by artificial respiration and kept alive for many hours, but that they finally succumb. The same result occurred in one case in man, the patient dying in a few days from pneumonia. Mueller has recommended strychnine in large doses as an antidote to snake venom, and as it is a powerful respiratory stimulant we may very reasonably hope for benefit from its use, but one grain, as has been recommended, is dangerous. It should be given in small, frequently-repeated doses, its effects being carefully observed. But the depression of the respiration and the heart are not the only effects of the poison, and violent vomiting, hæmaturia, and bloody stools are sometimes very marked symptoms. Strychnine will not counteract these effects of the poison, and, in order to prevent their occurrence, we must endeavor to aid its elimination. In trying to determine what channels serve this purpose it seemed to Dr. Brunton that elimination takes place through the salivary glands and the mucous membrane of the stomach and intestines.

Fayrer and himself found that the cobra venom had an extraordinary irritant action on mucous membranes, and when it was introduced into the stomach of a frog it caused most violent vomiting, very unusual in that animal. This experiment suggests that the vomiting which forms such a prominent symptom in many cases may be due to the poison being excreted by the mucous membrane of the stomach in much the same way as tartar emetic or apomorphine would be. If this hypothesis is correct we can readily understand why partial recovery may occur if the case is treated with artificial respiration, and yet death ultimately occur. For if the poison were eliminated into the stomach and intestines by the mucous membrane, recovery would follow; but if the venom, instead of being removed from the stomach as quickly as it was excreted, were to remain there and undergo absorption, the symptoms would return and death would ensue. It therefore seems that one should try, if possible, to remove any poison that might be eliminated, and this might be done by washing out the stomach with alcohol in some form, for example, whiskey or brandy. The want of means has prevented Dr. Brunton from trying this method, but the hypothesis seems to explain the good results obtained by the free use of whiskey or brandy internally. It is not the action of these substances on the nerve-centres that prevents death from the venom, for men bitten while drunk have died from the bite, although it is usually stated that if a man can be made drunk after he has been bitten his life will be saved. This would seem to indicate that the whiskey or brandy acts locally in the stomach, coagulating any venom which may have been excreted and preventing re-absorption. The plan that should be tested is to keep up artificial respiration, and wash out the stomach with whiskey or brandy. It is obvious that this plan might be combined with the subcutaneous injection of strychnine, and that, while the circulation and respiration are maintained by strychnine, alcohol might be freely given, and after it had been removed by vomiting or the stomach-tube, it could be repeated. This plan is not without danger, and it should first be tried in a laboratory, for large quantities of brandy or whiskey might, by their strongly irritant action in the stomach, lead to reflex depression of the circulation and fatal shock, to say nothing of gastritis in case of recovery.

CURRENT LITERATURE.

SATURDAY, FEBRUARY 7, 1891.

PARTIAL RESECTION OF THE LIVER.

HOCHENEGG adds another case of partial resection of the liver to his former publication (*Wiener klinische Wochenschrift*, No. 12, 1890). An unusually large gumma was removed by Professor Albert, by Hochenegg's method, from the margin of the right lobe; the diagnosis of gumma being made after the operation.

After burning away with the Paquelin cautery an oval ring of liver tissue over the seat of the tumor, the latter was torn from its bed by hooks and forceps, and was found to be encapsulated. The bleeding was stopped by an iodoform-gauze tampon, the parenchyma partially closed over the latter, and the portion of the liver thus treated was fixed outside of the abdominal walls by passing a fibroma-needle through the tampon and the liver-tissue on either side. The wound below was closely stitched to the liver-tissue. Hæmorrhage occurred on the second day, but was completely checked by an additional tampon.

On removing the needle on the twelfth day the liver was found fixed to the abdominal walls, and the cavity rapidly filling with healthy granulations. Though convalescence was retarded by phlebitis, with thrombus-formation in one thigh, the patient was discharged cured on the forty-fifth day.

The author claims that this method is superior to that of Tillmann, which consists of two distinct operations, namely, fixing the liver to the abdominal parietes, and, after attachment has formed, removing the diseased part. He admits that the latter method is less dangerous, but thinks that the removal of diseased tissue is not as complete as by his own operation.—*Wiener klinische Wochenschrift*, December 25, 1890.

AUTO-TOXÆMIA.

PROFESSOR V. JAKSCH, in an introductory lecture upon the clinical significance of toxæmia, distinguishes two groups of toxæmia, namely, exogenous and endogenous. Of the latter he recognizes three main varieties, as follows:

1. The toxic agents are normal products of tissue-interchange, abnormally retained in the body (uræmia, toxæmia from acute intestinal obstruction, etc.).

2. They may be the outcome of pathological processes, which change the normal course of assimilation of food and tissue-interchange, so that instead of non-toxic, toxic matter is formed. This group he names nosotoxicoses, which he subdivides into two principal divisions:

(*a*) The carbohydrates, fats, or albuminous matter, which may be decomposed abnormally and give rise to toxic products, *e. g.*, diabetic intoxication, coma carcinomatosum.

(*b*) A contagium vivum enters the body through the skin, or the respiratory or digestive tract, and develops toxic agents in the tissue on which it feeds, as in infectious diseases.

3. The toxic substance results from pathological non-toxic products, which again produce the toxic agent only under certain conditions.

This group he calls auto-toxicoses, and includes in it poisonous substances (diamine, toxalbumin) resulting from decomposition of the urine in the bladder, under certain pathological conditions, and giving rise to the condition called ammoniæmia.—*Wiener klinische Wochenschrift*, December 25, 1890.

NEPHRECTOMY FOR HÆMOPHILIA RENALIS.

PROFESSOR SENATOR reports an interesting case of hæmophilia renalis in a girl aged nineteen years. The diagnosis was made positive by the family history and the exclusion of organic cause of the hæmaturia. A hereditary tendency existed in the family of her father, who made matters worse by marrying a relative.

The seat of the bleeding was located in the right kidney by Dr. Nitze by means of an endoscope, through which he saw the blood escaping from the right ureter.

Since all medicinal measures to check the hæmorrhage failed and death by asthenia seemed unavoidable, nephrectomy was performed. The hæmaturia promptly ceased, the wound rapidly cicatrized, and four weeks after the operation the patient was discharged cured.

The excised kidney was normal, both macroscopically and microscopically.

In addition to this report, Senator reviews the two other cases of nephrectomy for obstinate hæmaturia, which have been reported, and believes that in these cases also hæmophilia was the disease, though that diagnosis was not made. In both cases life was saved apparently by the operation.

From these cases and the fact that the tendency to bleed is often confined to certain regions or organs (mostly to the nose), Senator concludes that, besides a general constitutional disease, there exists another form in which the faulty nutrition and condition of the vessels are strictly localized. This condition may be inherited as such or may appear with the development of the body.

This view opens an important therapeutic field, namely, that of removing the focus of danger, if necessary, by surgical means.—*Berlin. klin. Wochenschrift*, January 1, 1891.

THE USE OF SODIUM CHLORIDE SOLUTIONS DURING THORACENTESIS.

AFTER experiments on animals and later by trials on men, DR. S. LEWASCHEW reached the following conclusions:

A sterilized sodium chloride solution, introduced by gravity into the thoracic cavity to take the place of the exudate during thoracentesis, prevents marked fluctuations in intrathoracic pressure and permits a nearly complete removal of the effusion. It not only does no harm to the inflamed pleura,

if the proper precautions are taken, but seems to influence favorably the inflammatory process. Moreover, the operation is perfectly painless.

In Lewaschew's cases, after the procedure the inflammation gradually subsided and the greatly diluted exudate was completely absorbed.

In non-suppurative pleurisies without exception, and in recent cases of the suppurative form, no new effusion formed, one operation being sufficient.

If the operation was performed after the subsidence of the acute symptoms, recovery rapidly proceeded; if performed during the acute inflammatory stage and while the effusion was increasing, recovery was slower.

In all cases a decided rise of temperature with increased diuresis and pulmonary capacity, and decided decrease in the pectoral dulness, shortly followed the operation. These symptoms were probably the effects of absorption of the highly-diluted effusion.—*Deutsche med. Wochenschrift*, December 25, 1890.

EXTERNAL ŒSOPHAGOTOMY FOR CANCER.

Christovitch lays down the following indications for œsophagotomy in cases of cancer of the œsophagus:

1. The tumor being situated at the upper orifice of the œsophagus.

2. If the tumor is hard, the operation should be performed to avoid the consequences of a rent or a grave hæmorrhage in attempting to dilate the constriction.

He claims the following advantages of external œsophagotomy over gastrotomy:

1. As an operation it is easier to perform and less dangerous than is gastrotomy. To avoid every complication after the operation, it is necessary to make a free incision and to place an elastic bougie in the passage in order to permit the easy flow of liquids from the mouth and pharynx and from the wound.

2. The constriction is accessible to direct exploration and to attempts at dilatation, and if the tumor is found to be benign, or if a cicatricial constriction is found, the operation will produce a cure.

3. If the patient is not greatly exhausted, and if there is no great urgency, an external œsophagotomy will aid the operator in performing gastrotomy more readily and surely.

4. In every case of non-cancerous constriction of the upper portion of the œsophagus, œsophagotomy is preferable should there be indication for operative interference.

5. External œsophagotomy permits of further procedures, even resection of the cancerous portion of the œsophagus and suturing of the cut edge of the œsophagus to the edges of the cutaneous wound. —*Bulletin Générale de Thérapeutique*, December 30, 1890.

SYMPATHETIC OPHTHALMIA.

From a study of the recent literature of sympathetic ophthalmia, together with some personal observations upon the disease, E. Meyer arrives at the following conclusions:

1. Sympathetic ophthalmia of one eye appears only after traumatism of its fellow, either with or without penetration. The infectious nature of the traumatism appears to play an important *rôle* in the process.

2. The experiments of Deutschmann and the observations on experimental sympathetic ophthalmia of Gayet are not proof that the disease in man is transmitted by way of the optic nerves, although they demonstrate the anatomical possibility of that transmission.

3. The results of the autopsy on the case published by Becker (*Archiv f. Psychiatrie*, xii. 1) furnish anatomical proof of a sympathetic ophthalmia in man without alteration of the optic nerves. The possibility of the transmission in man by the ciliary nerves, or by other avenues, must be considered.

4. Enucleation of the eye primarily injured, the visual function of which cannot be preserved, is the most certain way of preventing sympathetic ophthalmia. Nevertheless, enucleation, practised even within the twenty-four hours following the injury, will not always prevent the development of inflammation in the other eye.

5. Opto-ciliary neurotomy is indisputably useful in eyes the vision of which is lost by irido-choroiditis —inflammatory, not traumatic—or by absolute glaucoma. It is inefficient in preventing sympathetic ophthalmia.

6. Resection of the optic nerve cannot as yet be regarded as sufficient to prevent sympathetic ophthalmia. In one case of resection, sympathetic ophthalmia developed fifteen days after the operation.—*Revue Générale d' Ophtalmologie*, November 30, 1890.

CORRESPONDENCE.

CHICAGO.

Drs. Gibbes and Shurly on the Etiology and Treatment of Phthisis.

By invitation of the faculty of the Post-graduate Medical School, Drs. Heneage Gibbes, of Ann Arbor, and E. L. Shurly, of Detroit, Michigan, lectured in Chicago, on the evening of January 23d, on the "Etiology and Treatment of Phthisis." The audience was large, and many of the most distinguished practitioners of the city were present. Dr. N. S. Davis presided.

Dr. Gibbes began by saying that for a number of years he had been working on the question of the unity or duality of phthisis, and that he has not yet been able to satisfy himself as to the question; for if sections of the lungs of cases in which there is consolidation are carefully examined under the microscope, we find that they may be divided into two varieties. One form is inflammatory, while the other is a new growth—tubercle. Then, as a subclass, he mentioned acute miliary tuberculosis, which he considered a separate affection, inasmuch as the symptoms are different, and the disease does not run a long course, terminating usually in two or three weeks. In this form there is no breaking-down

of the lung-tissue, or ulceration into the respiratory passages, and we never find tubercle-bacilli in the sputum. In tuberculosis we have a different state of things. By the term *tuberculosis* he meant a new growth composed of fibroid tissue in the lungs. He called it *fibroid* tissue, because it was not clear to him that it is *fibrous* tissue, the reaction not being exactly the same as that of the fibrous tissue formed by chronic inflammation. It is formed from the connective tissue of the lungs, therefore it is of a fibroid character. If we knew whether caseation in the inflammatory form of phthisis is the same as that due to the breaking-down of tubercle, it would give us a better idea of the disease than we have at present.

With regard to tubercles, it has been said that there are varieties. Now, in fifty, or even five hundred sections from a case of acute miliary tuberculosis, we will never find two tubercles identical in form. There is a sharp distinction between them. We have, on the one hand, a purely inflammatory change in which there is no attempt at any structural formation whatever; and on the other, a reticular formation. One form is inflammatory from the commencement, while the other is reticular or tubercular from the beginning, consequently we are justified in considering them as two distinct diseases. Dr. Gibbes has never been able to find tubercle in the earliest stages of involvement of the lung. In the tubercular form he has carefully examined hundreds of sections, and yet no tubercle bacilli could be found, either at the commencement or throughout the course of the disease. Furthermore, he has had cases of tuberculosis of a more chronic form, which had existed for a long time, in which (either at the commencement or during the course of the disease) absolutely no bacilli could be found in the sputum, and in which, on post-mortem examination, there were large cavities in the lungs, and sections showed the characteristic breaking-down of lung tissue.

He hoped that some one would be able in the future to show conclusively whether there is any relation between scrofula and tuberculosis.

Dr. Gibbes then dwelt upon consolidations produced in the lungs by other diseases than those he had mentioned. We have, besides the forms of tuberculosis, the lesions of syphilis, and hydatids, which are sometimes included among the consolidations of the lungs, and one other disease, namely, acute pneumonia. This condition does not clear up, but remains as a solid mass in the lungs. While it remains there it does not do much harm until some change takes place which produces an irritative action around the edge of the consolidated mass. If it is chronic, it does what a chronic inflammatory action always does, namely, it causes an increase of the fibrous tissue. After a time there is contraction, and the formation of bands of fibrous tissue caused by the inflammatory action of acute pneumonia which has not cleared up. This condition is called *fibroid phthisis.*

Dr. Gibbes closed by saying that Dr. Shurly and himself had pursued their investigations with a view to rendering inert some morbid product in the lung. They succeeded in doing this with iodoform. In their experiments they have paid little or no attention to the bacillus. They also sought for some chemical or chemicals which would combine with the morbid product in the lung, and found that the chloride of gold and sodium was efficacious. In the early part of their experimental work the remedies were given by insufflation, but later, by hypodermic injections, as they found that by this method the drugs were carried to the morbid product with greater effect.

Dr. Shurly followed, dwelling upon the subject from a clinical standpoint. He said that if the bacillus is the cause of the complex conditions known as tuberculosis, which we find in the lungs and elsewhere, we must recognize one or more theories to account for it. We have in phthisis pulmonalis three distinct clinical types. It is exceedingly difficult to distinguish acute phthisis from acute miliary tuberculosis; the course is rapid in each, and the temperature-range and symptomatology are about the same. We have another form, however, which may be properly denominated the subacute form, in which the patient has a distinct catarrhal inflammation, existing perhaps for a certain length of time in the lining membrane of the bronchial tubes with little or no constitutional disturbance, the symptoms being simply local. After a time constitutional disturbances come on, and we find that this inflammation extends to the smaller tubes, finally involving the cells. The results of this are general wasting, more pronounced constitutional disturbances, and breaking down of the tissue which involves both the bronchial tissues and that of the alveoli of the lung, followed by caseation. A peculiar suppuration takes place, and post-mortem examination will reveal cavities with indurated walls and with evidences of ordinary inflammation.

We also have a chronic form in which the constitutional disturbance is postponed for a still longer period. After a while, if the patient lives long enough, the same condition of breaking-down occurs, and we find the characteristic morbid anatomy of phthisis pulmonalis.

Dr. Shurly said it occurred to them in their experimental work that these several conditions could not possibly be identical. They found that the bacilli when inoculated in animals failed to produce general or constitutional disease; they, therefore, had to look for some other cause. They did not, and never had, denied the universality of the tubercle bacillus, but they thought it possible that it is only an agent or concomitant which brings about the condition known as phthisis. In this connection the speaker was reminded of the views advanced by Dr. N. S. Davis, in 1882, in a paper before the American Medical Association, in which he declared that "there must be some chemical or bio-chemical agent besides this bacterium (tubercle bacillus) to account for this condition of things." Many others have expressed the same doubt. It is argued by clinicians, especially in Europe, but also in America, that dried sputum, when breathed, produces the disease. The speaker could corroborate this, for by insufflation of dried sputum he had produced phthisis pulmonalis in monkeys; while if he inoculated the monkeys the disease would be general, that is, it would involve the spleen, liver, lungs, and other organs of the body. It has been stated by a number of bacteriologists and pathologists that if the sputum is dried in the sun, the virulence of the bacillus is destroyed, but in their experiments sun-dried sputum produced the disease. Does not that indi-

cate, said the speaker, that there is something accompanying the bacterium? They were thus led to think that the conditions of caseation, degeneration, and suppuration may be produced by some bio-chemical action. They have always had this idea in view, consequently their first work was done in the belief that the *fons et origo* was in the lungs, and was a germ or poison generated there, and setting up inflammatory changes. They believe that phthisis pulmonalis of the subacute form is similar in its nature to what was formerly called scrofulosis.

They began to use different substances locally to check caseation. Sulphuretted hydrogen they found is a most virulent poison. Other chemicals were also used with unsatisfactory results. They then tried chlorine gas and chloride of gold and sodium, and found that patients could inhale the gas for a considerable length of time. The idea was to stop the formation of the virus whatever it might be, probably a ptomaïne, leucomaïne, or toxalbumin. Although inhalations of the chlorine gas would not stop the process, it would check it. There were some other constitutional disturbances continually going on, which they were determined to neutralize.

Owing to the various changes which chemicals are liable to undergo in the stomach and intestines before diffusion, it was evident that the remedies should be administered hypodermically. They found at first that iodine used in this manner produced abscesses *in loco*, but further investigation disclosed the fact that these abscesses were due to chemical impurities, and after obtaining their iodine from Dr. Clark, an eminent chemist of Detroit, they experienced no further trouble from abscesses except in animals to which large doses were given. The same is true of chloride of sodium. They found, after using iodine for a considerable length of time in monkeys, that it so influenced the digestive tract that it had to be abandoned. It caused vomiting, diarrhœa, etc.

The speaker anticipates publishing some case-histories in a short time. Thus far they have treated altogether four well-marked cases of so-called general tuberculosis, two of which died, while one case is certainly very much better. The report of the fourth case he would hold in abeyance. They have also treated a number of cases of phthisis pulmonalis, including both the tubercular and pneumonic forms. Of twenty-two cases they have had six *so-called* cures—so-called because sufficient time has not elapsed to determine definitely that they are cures.

In the case of a girl who had decided laryngeal phthisis, with ulceration, cicatrization is so nearly complete that the cicatrices could be detected by the laryngoscope. She returned to her home practically well last Christmas, where a physician continued the hypodermic injections once a week.

In a case in which the upper left lung was breaking down, as evinced by moist râles, the patient was examined by two other physicians. He has been under treatment since September. He now receives a hypodermic injection every ten days, and has practically passed from treatment.

Another case, a young girl, has gone home, and, according to the latest advice, is doing well, with the exception that she has a little cough. A diagnosis of phthisis in her case was made by other physicians before she was sent to Dr. Shurly for treatment.

A fourth case is that of a school-teacher, who has resumed teaching. She coughs a little, but there is no elevation of temperature.

A fifth case, a man, brought to him with a chronic form of the disease, has left the hospital very much better. He eats well, has no elevation of temperature, and no sweats.

They have at present thirty-five cases under treatment. The case of tuberculosis, previously mentioned, is one which several outside physicians saw in Harper Hospital. Dr. Shurly thought of giving up the treatment in this case, as it is undoubtedly one of general tuberculosis. But after having had one or two relapses the patient is improving, and when he left home she was sitting up. Although she has some elevation of temperature, yet she has no sweats. She expectorates about an ounce of mucus every twenty-four hours.

The general principle of treatment, continued the speaker, seems to hinge upon the use of chlorine gas to stop caseation as far as possible, and to cut off the origin of the poison which is circulating freely through the system. In the early stages such a thing is unnecessary. It is only necessary to use iodine in these stages.

In regard to the manipulation of chlorine gas, it needs care. The air of the room should be thoroughly laden with a chloride of sodium spray before the chlorine gas is evolved.

NEWS ITEMS.

Philadelphia Polyclinic.—A course of evening lectures upon medical subjects will be given by the staff of the Philadelphia Polyclinic upon Tuesday and Friday evenings at 8 P. M., to which the members of the medical profession are cordially invited. The lectures will be as follows:

February 3, Professor John B. Roberts, "Blood-poisoning."

February 6th, Professor H. Augustus Wilson, "The First Treatment of Congenital Club-foot."

February 10th, Professor John B. Roberts, "Blood-poisoning."

February 13th, Professor Thomas J. Mays, "The Therapeutics of Pain."

February 17th, Professor Thomas J. Mays, "The Therapeutics of Pain."

February 20th, Professor S. Solis-Cohen, "The Koch Treatment of Tuberculosis."

February 24th, Professor Samuel D. Risley, "The Cause of Myopia."

February 27th, Professor S. Solis-Cohen, "The Therapeutic Relations of the Nervous System."

March 3d, Professor Samuel D. Risley, "The Treatment of Myopia,"

March 6th, Professor S. Solis-Cohen, "Neuro-medicaments."

March 10th, Professor Thomas G. Morton, "Club-foot."

March 13th, Professor John B. Deaver, "Endoscopy of the Urethra—Illustrated."

March 17th, Professor B. F. Baer, "Displacements of the Uterus."

March 20th, Professor J. Henry C. Simes, "Perverted Sexual Passion."

March 24th, Professor B. F. Baer, "Displacements of the Uterus."

March 27th, Professor B. Alexander Randall, "Aural Inflammation as a Cause of Brain Lesions."

March 31st, Professor Thomas S. K. Morton, "Asepsis and Antisepsis."

April 3d, Professor Charles K. Mills, "Brain Anatomy and Localization."

April 7th, Professor Alexander W. McCoy, "Intubation of the Larynx in Adults, and Diseases Demanding its Performance."

April 10th, Professor John B. Deaver, "Brain Surgery."

March 14th, Professor Arthur W. Watson, "Laryngeal Paralysis."

April 17th, Professor Charles K. Mills, "Methods of Studying Signs and Symptoms of Nervous Diseases."

April 21st, Professor Arthur Van Harlingen, "The Present Aspect of the Leprosy Question."

April 24th, Professor Charles K. Mills, "Mistakes in the Diagnosis of Nervous Diseases."

April 28th, Professor Edward P. Davis, "The Treatment of Delayed Labor."

May 1st, Adjunct W. M. L. Coplin, "Applied Pathology, its Value to the General Practitioner."

May 5th, Professor Edward P. Davis, "The Use of the Forceps."

May 8th, Adjunct W. M. L. Coplin, "Applied Pathology for the General Practitioner."

May 12th, Professor Edward P. Davis, "Labor in Contracted Pelves."

May 15th, Professor Louis W. Steinbach, "Suppuration."

May 19th, Professor Edward P. Davis, "Obstetrical Antisepsis."

May 22d, Professor Edward Jackson, "Eye Symptoms of Cerebral and Spinal Disease."

May 26th, Professor Edward P. Davis, "The Artificial Feeding of Infants."

May 29th, Professor Edward Jackson, "Eye Symptoms of Cerebral and Spinal Disease."

Cases, specimens, and the lantern, as well as demonstrations of endoscopy and intubation, will be used in illustration, and a most interesting series of evenings is promised, surpassing the former courses as much as the former temporary quarters are excelled by the new Polyclinic building on Lombard above Eighteenth Street.

Deprived of Medical Services.—The following article from the Pittsburg *Dispatch* is of interest to medical men in general:

"John Mesendorf, of Etna, has entered suit against Dr. G. R. B. Robinson, President of the Physicians' Protective Association, of Sharpsburg and Etna, for $10,000. damages. In the statement of his case Mr. Mesendorf alleges that he received a notice from Dr. Robinson as president of the association, stating that the physicians had organized themselves into an association to enable themselves to collect delinquent accounts. It stated that the plaintiff's account was overdue, and unless he paid it or satisfactory arrangements were made by July 1, 1890, his name would be placed on the list of delinquents, and medical attendance would be refused him. Mr. Mesendorf claims that he was not indebted to the defendant, and paid no attention to the bill or notice he had received. The defendant then, he states, without cause and maliciously, placed his name on the list of delinquents mentioned in the notice.

"For the disrepute into which his name and character have been brought, without cause, and the deprivation of medical service, Mesendorf asks $10,000 damages. Mr. Mesendorf is an old soldier and has a family. He denies that he ever contracted a bill."

The Medical and Surgical College of New Jersey.—The following preambles and resolutions relative to the Medical and Surgical College of New Jersey, were adopted by the District Medical Society for the County of Hudson on December 16, 1890:

Whereas: A certain medical institute, called the "Medical and Surgical College of the State of New Jersey," chartered by special Act of this State, approved March 17, 1870, was organized during the year 1888, and opened in three small rooms on the top floor of the general office building, No. 47 Montgomery Street, Jersey City, and

Whereas, Said alleged college has graduated several students whose diplomas have been presented to the Hudson County Board of Health, and who have been refused registration, and

Whereas, It has appeared to this Society, by good and sufficient evidence, that several members of the faculty, nearly all of whom are non-residents of this State, are either incompetent to deliver lectures on the topics assigned them, or are graduates of disreputable or fraudulent medical colleges; that the facilities for instruction in said alleged college are totally inadequate, and that no clinics, dissections or hospital practice have been or can be given; that the provisions of the charter of said college have not been observed by the authorities thereof; that the requirements of said charter, even if the same were strictly followed, are far below the standard of minimum requirements of medical colleges adopted and demanded by all medical authorities at the present time, and that, therefore, the possession of a diploma from said alleged college is no proof whatever that the holder thereof has received a good and sufficient medical education, and

Whereas, The State Board of Medical Examiners of New Jersey will introduce a bill at the next meeting of the Legislature for the purpose of repealing said charter:

Be it resolved, That the District Medical Society for the County of Hudson does hereby earnestly protest against the existence of said alleged college as an unnecessary, inadequate, and disreputable institution, tending to degrade and lower the standard of the medical profession; that the influence of this Society and of the individual members thereof be given to the support and passage of the bill to repeal said charter, and that a copy of this resolution be forwarded to the several medical societies of this State, with requests for their support and influence for the passage of said bill.

HENRY B. RUE, M.D.,
Secretary.

Rich and Poor.—There was once a rich woman who discovered that she was about to become a mother. She

did not wish to become a mother, for to do so would put her to some inconvenience, and for a short time interfere with her pleasure. So she sent for her physician, who was very noted and respectable. As a result of preventing her from becoming a mother, she died. The doctor certified that she died from peritonitis. Her remains were prepared for burial by a fashionable funeral director. Her sermon was preached by a fashionable clergyman. The fashionable doctor attended the funeral. Everybody mourned the death of the estimable Christian woman. Everybody was satisfied. "Because," said they, "whatever a rich woman, a noted doctor, a fashionable undertaker, and a swell clergyman do is all right."

There was once a poor cigarette girl, named Annie Goodwin, who discovered that she was about to become a mother. She did not wish to become a mother, for to do so would prevent her from ever making a living, except by a life of shame. So she sent for a doctor named McGonigal. As a result of preventing her from becoming a mother she died. The doctor certified that she died from peritonitis. Her remains were prepared for burial by an undertaker named Merritt. She had no funeral sermon, but was buried secretly. The police heard of it and arrested the doctor, the undertaker, the woman in whose house the cigarette girl died, a little boy, a girl friend of the dead woman, and the girl's lover. And everybody said it was horrible that so many persons should have conspired to murder the cigarette girl. They even wanted to lynch the doctor. "Because," said they, "unless such things are done by a rich woman, a noted doctor, a fashionable funeral director, and a swell clergyman, they are frightful crimes."—*Twentieth Century.*

The Medical Examiners' Bill.—Some misunderstanding seems to have arisen among certain members of the profession as to the identity of the two bills which have been presented to the Legislature of Pennsylvania. The one which goes by the name of the "Medical Examiners' Bill" is the one which was presented by Mr. Riter, of Philadelphia, and has received the unanimous endorsement of the State Medical Society of Pennsylvania and of the various County Medical Societies. The bill, which is entitled "A State Board of Medical Education," is one which has been presented by the homœopaths and eclectics, and possesses the disadvantage which we have already referred to in a previous issue, namely, a lack of fairness in representation.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM JANUARY 20 TO FEBRUARY 2, 1891.

By direction of the Secretary of War, the extension of leave of absence, on account of sickness, granted STEVENS G. COWDREY, *Major and Surgeon*, in Special Orders No. 302, December 27, 1890, from this office, is still further extended two months, on surgeon's certificate of disability.—Par. 13, *S. O. 19, A. G. O., Washington, D. C.*, January 23, 1891.

By direction of the Secretary of War, WILLIAM H. GARDNER, *Major and Surgeon*, is relieved from further duty in the field, and will return to his proper station.—Par. 2, *S. O. 19, A. G. O., Washington. D. C.*, January 23, 1891.

By direction of the Secretary of War, FRANCIS J. IVES, *Captain and Assistant Surgeon*, is relieved from duty at Pine Ridge Agency, South Dakota, to take effect when his services can be spared by the commanding officer of the troops there stationed, and will then return to New York City and resume his leave of absence.—Par. 9, *S. O. 107, A. G. O., Washington, D. C.*, January 21, 1891.

By direction of the Secretary of War, EDWIN F. GARDNER, *Captain and Assistant Surgeon*, is relieved from duty at Pine Ridge Agency, South Dakota, and will proceed, without delay, to Fort Riley, Kansas. and report, for temporary duty, to the commanding officer of that post.—Par. 10, *S. O. 107, A. G. O., Washington, D. C.*, January 21, 1891.

By direction of the Secretary of War, leave of absence for six months, with permission to go beyond the sea, is granted JULIUS H. PATZKI, *Major and Surgeon.*—Par. 5, *S. O. 24, A. G. O., Washington, D. C.*, January 29, 1891.

By direction of the Secretary of War, WILLIAM STEPHENSON, *Captain and Assistant Surgeon*, will proceed, without delay, from Columbus Barracks, Ohio, to Fort Wayne, Michigan, and report in person to the commanding officer of that post for temporary duty, and upon completion thereof will return to his proper station—Par. 13, *S. O. 23, A. G. O., Washington, D. C.*, January 28, 1891

By direction of the Secretary of War, ROBERT J. GIBSON, *Captain and Assistant Surgeon*, is relieved from further temporary duty in the field, to take effect so soon as his services can be spared by the officer commanding troops with which he is serving, and will then return to New Haven, Conn., and resume his leave of absence.—Par. 6, *S. O. 22, A. G. O., Washington, D. C.*, January 27, 1891.

By direction of the Secretary of War, CHARLES M. GANDY, *Captain and Assistant Surgeon*, is relieved from temporary duty in the field, to take effect when his services can be spared by the commanding officer of the troops with which he is serving, and will then return to Ocean View, Cape May County, New Jersey, and resume his leave of absence.—Par. 1, *S. O. 21, A. G. O., Washington, D. C.*, January 26, 1891.

By direction of the Secretary of War, WILLIAM O. OWENS, JR., *Captain and Assistant Surgeon*, is relieved from temporary duty with troops in the field, to take effect as soon as his services can be spared, and will then return to Muskogee, Indian Territory, and resume his leave of absence.—Par. 3, *S. O. 20, A. G. O., Washington, D. C.*, January 24, 1891.

By direction of the Secretary of War, WALTER REED, *Captain and Assistant Surgeon*, is relieved from temporary duty at Fort Keogh, Montana, to take effect as soon as his services can be spared by the commanding officer of that post, and will then return to Baltimore, Maryland, and resume his duties in that city as Attending Surgeon and Examiner of Recruits.—Par. 3, *S. O. 20, A. G. O., Washington, D. C.*, January 24, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR TWO WEEKS ENDING JANUARY 31, 1891.

PERSONS, REMUS C., *Surgeon.*—Ordered to the U.S.S. "Concord," February 10, 1891.

CRANDALL, R. P., *Assistant Surgeon.*—Ordered to examination preliminary to promotion.

BERRYHILL, T. A., *Passed Assistant Surgeon.*—Detached from the "McArthur," and wait orders to "Marion."

JONES, W. H., *Surgeon.*—Detached from "Swatara," to proceed home and is granted six weeks' leave of absence.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication, or 250 reprints will be furnished instead of payment, provided request for reprints be noted by author at top of manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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ORIGINAL ARTICLES.

REPEATED OPERATIONS ON THE SAME NERVE FOR CHRONIC FACIAL NEURALGIA.

BY EDMUND ANDREWS, M.D.,
PROFESSOR OF CLINICAL SURGERY IN THE CHICAGO MEDICAL COLLEGE AND IN THE MERCY HOSPITAL, CHICAGO.

IN an article published elsewhere, I called attention to the fact that repeated operations on the same nerve will give, after each operation, a prolonged period of relief to patients suffering from facial neuralgia. Further experience has thrown additional light on the subject, and clearly indicates a coming advance in neural surgery.

The causes of trifacial neuralgia are generally peripheral, though a few cases originate in the brain itself. The opinion is gaining ground that in superior and inferior maxillary neuralgias the point of origin is most frequently a decayed tooth, but that various injuries and diseases of the maxillary region may also be causative. Inflammation and ulceration around a tooth, or some other irritation, set up a neuritis in the corresponding nerve-twig. Generally this subsides without causing permanent injury, but in a few cases, for reasons at present unknown, the neuritis becomes progressive and advances to the main nerve-trunks. In the lower jaw, for instance, the inflammation reaches the main inferior dental nerve, and with the well-known obstinacy of neuritis proceeds backward along the dental canal, emerges from the foramen on the inner side of the ramus, creeps up the inch and a half of nerve from that point to the skull, and follows the trunk of the nerve into the foramen ovale, where it causes disease in the great semilunar ganglion just above the foramen and inside of the skull. Many cases seem to stop here permanently, causing frightful pain, referred to all of the three trunks of the trifacial, but not entering the brain. A few, however, follow the fifth nerve into the medulla oblongata, and set up a variety of cerebral disorders. In one case under my observation, the sight of both eyes was lost, either from the disease extending to the roots of the optic nerves, or to the visual centres of the brain itself. However, as previously stated, only a few progress to this extent. In the great majority of cases the inflammation seems to cease at the semilunar ganglion, causing violent pains, referred primarily to the inflamed branch, but radiating in a less degree to the other two trunks. To the patient the pain seems peripheral, though the real cause lies deep. In bad cases the paroxysms come on with violence—sometimes every fifteen minutes—with intervals of ease.

The old surgeons, like the patients, located the disease at the place where the pain seemed to be, and to this day neuralgic teeth are often pulled out in the vain hope of removing the cause of suffering.

In cases of neuralgia of the inferior dental nerve, the elder Gross advised subcutaneous section of the trunk where it emerges from the anterior mental foramen. Experience soon showed the futility of these and similar methods, and the French surgeons advocated the idea that the points of irritation were to be found in some of the numerous bony canals and foramina through which the branches of the fifth nerve pass, and instructed their pupils to resect these nerves on the proximal side of the bony canals. This proved better, and many brilliant cures, some permanent and others temporary, were thus effected. The majority of cases, however, relapse, when if a section of nerve long enough to prevent reproduction has been removed, surgeons abandon operative treatment as hopeless, unless there is enough of the stump of the nerve left to admit of a second resection.

Just here accident favored us. In a number of instances in searching for the shortened stump of a previously-resected inferior maxillary nerve, the operation resulted successfully, though not a particle of nerve-trunk could be found in the tissue removed. This, of course, led to thought and to action.

The following case is a good example:

A lady, about seventy years of age, applied for relief from a characteristic and severe chronic neuralgia of the inferior maxillary nerve. I trephined the ramus of the jaw, and picking up the trunk of the nerve with a pair of stout forceps, slowly wound it on the beak of the instrument, and broke it off some distance upward toward the point of exit from the skull, bringing away about an inch of the nerve.

The parts healed readily, and the patient was free from pain for about a year and a half. A relapse then occurred, and she begged for another operation. Though unable at first to see that any result could be expected from an operation when the nerve was out of reach, it occurred to me that the broken end of the nerve-stump must necessarily be attached to the cicatrix of the old operation, that at least I could thoroughly stretch it, and

that this might be useful just as nerve-tension is in Nussbaum's operation. I therefore operated again, cutting along the line of the old scar to avoid hæmorrhage and shock. The hole left by the trephine was closed by cicatricial tissue. With a tenotome I carefully separated the cicatricial disk from the edges of the bone and drew it a little outward, then seizing it with strong forceps I forcibly drew upon it, and slowly twisted its internal prolongation until it came away. No nerve-tissue could be found in it, but the deeper part must have been attached to the nerve-stump, and hence the latter must have been strongly stretched. There was neither shock nor hæmorrhage. The patient was again relieved, and remained free from pain for a year or two. Again she relapsed, and was again restored to comfort by a repetition of the procedure. She was thus relieved four times during a period of six years, though no nerve-tissue was exsected except at the first operation.

Similar cases have repeatedly occurred in my experience, and I think that many other surgeons have unintentionally accomplished the same thing, while pulling on the cicatrices of old operations in the hope of removing more of the stump. The mechanism of the procedure is probably as shown in the accompanying cuts.

FIG 1.

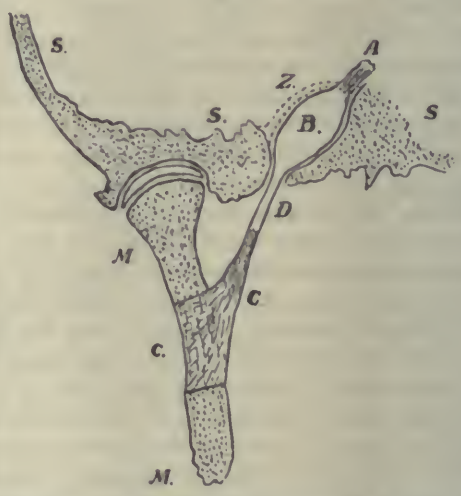
S, S, S, S. Part of base and left side of skull, cut transversely through the foramen ovale. *M, M.* Ramus of the jaw, cut nearly in the same direction. *A.* Fifth, or trifacial nerve, entering the semilunar ganglion. *B.* Semilunar ganglion, bound down by a thick roof of dura mater, indicated by the double dotted lines *Z*. *D.* Inferior dental nerve passing down through the foramen ovale to enter the foramen in the ramus at *T, K. K.* The myloid branch. *T.* The horizontally-shaded portion represents the part of the bone removed by the trephine.

Fig. 1 represents a transverse section of the left half of the base of the skull seen from behind. The line of section runs transversely through the foramen ovale and the articulation of the jaw. The ganglion *B* is viewed edgewise from behind, so that the ophthalmic and superior maxillary branches, which are in front, are not seen, but the inferior dental nerve *D* is shown, passing from the foramen ovale to the posterior dental foramen of the lower jaw, between *T* and *K*, a distance of about an inch and a half. *M M* is a section from the condyle of the jaw downward and a little forward to the bottom of the ramus. The horizontally-shaded portion *T* represents the part usually removed by the trephine.

In making a resection of the nerve, we, of course, remove the button of bone and drag the nerve out by avulsion, or divide it high up with scissors, and then draw it out. As the sheath of the nerve has countless attachments to the connective tissue, which are lacerated in dragging it out, we leave the track of a future cicatrix, extending from the end of the nerve-stump to the external wounds. In healing, the foramen made by the trephine is not closed by bone, but by a disk of cicatricial tissue adherent to the bone at its edges, and extending in a conoidal form to the divided end of the nerve.

The action of the secondary operations is doubtless as follows: The disk being separated from the bone and dragged out by force, powerful traction is made upon the attached stump of the nerve *D*.

FIG. 2.



A. Fifth nerve. *B.* Semilunar ganglion. *D.* Stump of the inferior dental nerve. *C, C.* Cicatrix filling the opening made by the trephing, and extending to the cut end of the nerve *D*. The cicatrix *C* has not the smooth, well-defined outline shown in the figure, but it constitutes a mechanical connection between the disk occupying the trephine hole and the cut end of the nerve.

In short, it produces vigorous nerve-stretching, which acts directly on the nerve-trunk itself, and effects mechanical changes in the ganglion *B*, so that in principle it is simply Nussbaum's nerve-stretching operation.

The possibility of thus repeatedly curing after relapse is of great practical value, and seems to be not generally known to authors.

Now, as nerve-stretching without resection often effects prolonged cures, it is a fair question whether resection of the nerve is necessary at all, since one might uncover the trunk, either by trephining or by the operation through the mouth, and simply stretch the nerve, and one could repeat the stretching as often as relapses occurred.

Another suggestion naturally arises. It is probable that the seat of the inflammation in chronic cases is almost always in the semilunar ganglion, and that extirpation of that organ would effect a permanent cure; but as the ganglion is situated within the cranium and lies close against the internal carotid artery, no one has yet shown us a safe method of removing it. The operation could be performed without great risk, as follows:

First raise the tissues from the outer surface of the ramus, and divide that part of the jaw below the middle, along a line commencing at the junction of the front edge of the ramus with the body of the bone and running downward and backward. Then forcibly turn the ramus outward, so as to expose the parts within it. Identify the nerve, and follow it upward and inward to its exit from the foramen ovale. A small artery enters the foramen from below, which might require torsion. Then with suitable instruments enlarge the foramen sufficiently to admit a very small curette, or other instrument capable of breaking down and removing the substance of the ganglion. The latter is roofed in above by a very strong covering of dura mater, separating it so effectually from the brain, that the convolutions need not be wounded. In the figures, the double-dotted lines *Z* indicate this covering. Along the inner border of the ganglion the internal carotid artery lies in pretty close relation, so that great care would be required in that situation. The centre of the ganglion lies nearly in the direction of a straight line drawn from the bottom of the sigmoid notch of the ramus upward and inward through the centre of the foramen ovale. After the operation, the ramus could be turned down again and wired to the body of the bone. The operation should, of course, be done antiseptically, and drainage secured at a convenient point. In those very obstinate and severe neuralgias of the fifth nerve, which render existence almost unbearable to the patient, I think this operation would offer a probability of permanent cure, and be entirely justifiable.

No. 6 SIXTEENTH STREET.

Artificial Production of Inguinal Hernia.—It is said that in Russia the Jews sometimes produce inguinal hernia in themselves in order to avoid military service. An instrument resembling a glove-stretcher is used, and by means of it the inguinal canal is gradually dilated.

AN INVESTIGATION OF THE COMPARATIVE FREQUENCY OF TYPHOID FEVER IN THE CITY OF READING AND THE COUNTY OF BERKS.

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FIFTEEN years ago, while riding with a physician in an adjoining county, on his way to a patient, he pointed out a house with a remarkable history. He said that he had practised medicine in that locality for thirty years, and during that time the occupants of the house had changed every two or three years, that he had been attending physician to all the families who lived in the house during that time, and that every family had had typhoid fever while there. This remarkable story seemed to me proof that there was a local cause for the disease about the house, and impressed me with the idea that local causes for typhoid fever might generally be found, if properly sought. It also led me to question whether, if the cause of typhoid fever could cling to a farmhouse so long, reproduce itself so often, and poison so many families in succession, such a place could not become a centre of infection for people who, although living at a distance, consumed some of the food-products of the farm, in which the germs of disease might be transported.

With this question in mind, I made a number of observations during the years that have since elapsed, the results of which led to the present investigation of the comparative frequency of typhoid fever in Reading and the surrounding country. The field of this investigation embraces the city on the one hand and the rural districts of the county of Berks on the other. The year 1889 was selected because it presented a minimum amount of the disease, in both the city and county. The data upon which this report is based were obtained by mailing a series of questions to every registered physician in the city and county. The work was unfortunately delayed by the appearance of the "grippe" at the time that the questions were sent to the physicians in the county. In consequence of this, some were disabled and others so busy that replies were obtained with difficulty, and from some none at all were received because so long a time had elapsed before they could give the matter attention, that, having kept no record of cases, they could not give definite answers.

Of the 97 physicians who practised in Berks County during 1889, positive and definite answers were received from 70. These gentlemen reported 412 cases. Supposing the 27 who did not report to have had the same average number of cases, they would represent 159 cases. To these should be added 18 cases, which occurred just outside the city limits, and were attended by city physicians. The total for the county then would be 589 cases.

In the city there are 71 registered physicians, excluding specialists who do not attend fever cases. Of these, 66 reported 208 cases, and 5 did not report. Giving the latter the same average number of cases as those who reported, they would represent 16 cases. In addition to these there were treated in the two hospitals 16 cases which originated within the city limits, making a total of 240 cases for the city.

The population of Reading, as shown by the last census, was last summer 59,000, and that of the county 76,000; and for my purpose it may be assumed that the proportions were the same last year. The city, with 59,000 inhabitants had 240 cases of typhoid fever, or 1 case for every 246 residents; while the county, with 76,000 inhabitants, had 589 cases, or 1 for every 129 residents. In other words, there were in the city 4.07 cases for every 1000 inhabitants, and in the county 7.75 cases for every 1000.

Although my previous observations led me to believe that typhoid fever was more prevalent in the county than in the city, a ratio of nearly two to one is entirely beyond expectation. Indeed the difference is so striking that in the absence of corroborative statistics from other sources—and I know of none to offer—it may inspire in the reader doubts of the correctness and truthfulness of the report; and hence it may be well to state in detail the characteristics of the field embraced by the investigation, and the method by which these results were obtained.

Every physician practising in the county was addressed by letter or in person, and was requested to furnish a list of the cases of the disease he had attended during the year in his own field of work, excluding those that he saw only in consultation. Among these physicians there are a number who live just beyond the borders of Berks County and yet see many patients in the county, and others who reside in the county, but do much of their work outside of its limits. These physicians were requested to report only the cases which occurred within the county lines. The division between the city and county was made in the same way. Cases which occurred outside of the city limits, although attended by city physicians, were assigned to the county. In the records of both city and county, cases occurring in visitors or new residents, who arrived within thirty days before the appearance of the disease, were not counted.

The geological features of the county are such as would largely prevent the transmission of disease-germs through the water-courses from adjoining districts. The eastern and western borders of the county are almost on a line with the water-sheds of the Delaware and Schuylkill and the Susquehanna and Schuylkill, respectively; and the northern boundary being the summit of the Blue Ridge, the surface water of the other side reaches the Schuylkill before reaching the county.

The water-courses of the southern part of the county flow in an outward direction to empty into the Lehigh, Susquehanna, and Schuylkill Rivers. The Schuylkill, flowing in a southeasterly direction, divides the county into two almost equal sections, carrying with it the drainage of the lower Schuylkill coal-field, but its water is not used for domestic purposes either in the county or city.

The water-supply of Reading is derived from springs and brooks which arise in the mountainous districts immediately east of its boundaries. The subsoil of these districts is composed of Potsdam sandstone and Laurentian gneiss, and the water is unsurpassed for both domestic and manufacturing purposes. The section from which it comes was singularly free from typhoid fever last year, and the physicians who are familiar with the region say that the disease is very infrequent there at all times. Dr. M. L. Bertolette, of St. Lawrence, whose practice extends into the section that supplies the largest of the three storage reservoirs—an area of six and one-half square miles—states that in six years he has not seen a single case of typhoid fever there, while in the valley below there have been some cases every year.

Such testimony tends strongly to exclude our water-supply from the causes of the disease in the city, and it is corroborated by the entire absence of evidence that a single case arose from the use of the city water. On the other hand, a large number of cases, which occurred among the employées of a cotton mill, were traced directly to the use of water from a well near the mill. The exact number of these cases could not be determined without more time than I could give the matter; but it is safe to say, from information given by some of the attending physicians, that there were more than twenty-seven.

The varying geological features of the different sections of the county have an important bearing upon the distribution of this disease. The shale formations furnish a much larger proportion of cases than the limestone. This is undoubtedly owing to the greater porosity of the subsoil in the former. In the shale sections the surface is more undulating than in the limestone, and nearly all the dwellings are located in the depressions near springs. Where there are no springs, and wells are necessary, water is usually found quite near the surface. The house being near the water, the barn, privy, and other outbuildings are of necessity placed upon higher ground. Then, with a porous, sieve-like soil between the well or spring and these buildings, and the natural ten-

dency of the water which is absorbed by the higher ground to percolate to the lowest point, it becomes apparent that the germs of the disease, once thrown into a cesspool, may for a long time vitiate the water and infect successive occupants of the dwelling.

While the owners of shale lands have not recognized the evil sanitary effects of the looseness and permeability of their subsoil, they are fully aware of its blighting effect upon their crops. Some years ago an intelligent owner and occupant of a large farm in a shale region complained to me of the disadvantages under which he labored as compared with his more fortunate neighbors on the limestone lands, just a mile south of his own. He said that they, with the same labor and expense, raised much larger crops than he could. Upon being asked why he did not use fertilizers and thereby improve the soil, he replied that he had tried them, but found that while on limestone land they improved the crops for several seasons, on his the next rain carried them down into the earth far beyond the reach of the growing crops. The inference to be drawn from this farmer's statement for my purpose is, that if his spongy subsoil imbibed the fertilizers with the next rain, it would do the same with anything else that water would bring in solution to it.

In the limestone areas there are fewer springs and their flow is usually larger, and varies less in the wet and dry seasons, indicating that they are draining a larger surface, and hence that their water comes through the earth from a greater distance. Moreover the clay which overlies the rocks, being more compact, is a better filter than shale. Then again, the wells are deeper, it being a common thing to find them from thirty to fifty feet deep in limestone land.

Typhoid fever was most prevalent in the shale soil of this county, not only last year, but for a long time previously. I observed the fact and spoke of it before the Berks County Medical Society twelve or thirteen years ago. A similar observation has been made, I believe, by Pettenkoffer, of Munich, on the occurrence of the disease in the vicinity of that city.

The correctness of the primary reports upon which this observation is based is open to question, and, of course, depends upon the truthfulness and professional ability of the physicians who kindly made them.

The report from the city is as nearly correct as it can be made without the aid of every physician. To ascertain whether any of the five who did not reply to my inquiries reported deaths from typhoid fever, I examined the records of the Health Office. The name of one of the five appeared, with one case, and all the other deaths from the disease were accounted for by those who sent reports.

It is possible, then, that the five physicians from whom I had no response did not have the average number of cases with which they were credited, and that consequently the whole number in the city is a little less than has been stated.

It is a matter for regret that the investigation of the county could not be made as complete as that of the city. However, the errors which do exist are probably in favor of a larger number of cases than this report shows.

Of the twenty-seven physicians who have not responded, and who were credited with the average number of cases in making up the figures, twenty-one reside in the old slate and new red sandstone formations, in which the disease is more prevalent than in the limestone belt, and probably they had more than the average number, which would make the figures of the report too low. Moreover, I have not included in this report an outbreak of the disease which occurred in one of the school districts between Kutztown and Virginsville, in the old slate formations. This outbreak was supposed to have originated from well-water used by the school, and included a large number of cases. Most country schoolhouses are not supplied with wells, but the water is usually brought from the nearest dwelling, so that the scholars are exposed to the morbific influences which may be present in the dwellings. The school in which the outbreak occurred is situated between the residences of a number of physicians, whose practice extends throughout the district, all of whom, unfortunately, failed to report their cases. Full accounts of this endemic would have added considerably to the number of cases in the county.

In a collective investigation like this the question of the correctness of the diagnosis of the cases reported is worthy of careful consideration, but it can be answered only in the most indirect manner. Other things being equal, the diagnosis will be correct in inverse proportion to the number of families from which a given number of cases are collected, because the whole family is usually more or less exposed to the poison which caused the disease in one of its members. With this idea in mind the physicians who took part in the investigation were requested to state the number of families affected and the number of cases that occurred in each family. Unfortunately, the reports received are so imperfect that only a few can be used. Only those who had more than ten cases each have given full replies to the questions. Their figures are exhibited in the table on the next page.

It is seen that 8 country physicians return 166 cases from 83 families—an average of 2 to each family—while 7 city physicians return 100 cases from 77 families, an average of 1.3. The probabilities of correct diagnoses are then, from this point

of view, decidedly in favor of the country. These figures also indicate either that country people are more susceptible to typhoid fever than are residents of the city, or that the poison which produces the disease is more virulent, or continues its activity longer in centres of infection in the country than in the city.

COUNTRY.			CITY.		
	No. of families.	No. of cases in each family.		No. of families.	No. of cases in each family.
Physician, No. 1	18	1	Physician, No. 1,	4	1
	5	2		1	2
	3	3—37		1	4—10
" No. 2	3	1	" No. 2	10	1
	1	2		1	2—12
	2	4	" No. 3	6	1
	1	10—23		2	2—10
" No. 3	4	1	" No. 4	3	1
	1	3		3	2
	1	5—12		1	3—12
" No. 4	12	1	" No. 5	11	1
	1	2		1	5—16
	1	11—25	" No. 6	18	1
" No. 5	1	2		1	2
	1	3		1	5—25
	1	9—14	" No. 7	11	1
" No. 6	7	1		2	2—15
	4	2			
	2	3			
	1	5—26		77	100
" No. 7	3	2			
	2	3			
	1	4—16			
" No. 8	4	1			
	1	2			
	1	3			
	1	4—13			
	83	166			

Inasmuch as it has become fashionable in the large cities to blame the plumbers for the spread of typhoid fever, an effort was made to ascertain whether indoor water-closets had any bearing upon the occurrence of the disease in Reading, although the conditions are not the same, as this city has no system of house-sewerage. The bath-tubs and water-closets empty into wells, usually from ten to thirty feet from the houses, so that each building has its own sewer, and cannot through bad plumbing be affected from adjoining ones. But, the germs of the disease having once reached the cesspool of one of these houses, there is no reason why they should not find their way up the pipes and into the house as easily as if they had to start from a common sewer-pipe. The only difference, then, between a house with modern conveniences in Reading and one in a city with a common house-sewerage system, is that in the former typhoid fever must at some time have been on the premises before the house could be infected through bad plumbing, while in the latter its first appearance might be due to imperfect connection with a common sewer. The reports of the physicians upon this point were so unsatisfactory that no calculations could be based upon them, and information was then sought in the contagious-disease record of the Health Office. There the surprising fact was discovered that only 66 of the 240 cases of the disease which occurred in the city were recorded. Of these, only nine occurred in houses that pay water tax for indoor closets, and, of the nine, six were in one family, in a new house, in which typhoid fever had not previously existed, and the disease was undoubtedly due to the use of milk from an infected dairy. In the three other cases no cause outside of the dwelling has been discovered, and it is therefore possible that they may have been due to bad house-drainage. It is known that one case did arise in connection with a leaky sewage-pipe in a hotel.

Admitting that the three cases were due to this cause, we have 3 out of 66 cases, or 1 in 22. The whole number of houses in the city is 15,000, and of these 1471 have indoor water-closets—about 1 in 10. The houses with water-closets, then, show less than half as many cases of the disease as those without them.

The sources of food-supply were not examined for causative relations to the disease, except in a few cases to which the attending physicians invited attention, because the time for such an undertaking could not be spared. Inquiry in these few instances led to the discovery that eleven cases, in various parts of the city, could be traced to the use of milk from a dairy farm on which the disease had occurred during the year. There were a few other cases in which it was suspected that the milkman brought the disease, but for the reasons stated they were not scrutinized. There is, however, ground for believing that in many more instances the cause could have been traced to the source of food-supply.

After deducting the 11 cases which were due to the use of contaminated milk, and the 27 due to the use of the well-water at the cotton-mill, there remain of the 240 cases which occurred in the city 202 of which the cause is unaccounted for—an average of 3.43 per 1000 inhabitants. It is possible, but not probable, that these 202 cases arose from causes which were confined to the city. Nearly all of them occurred in houses without indoor water-closets, which, so far as infection from sewage is concerned, are in the same condition as rural homes, the cesspools being some distance away. Actually, they are under better sanitary conditions, because, in the city, cesspools must be twenty feet deep, while in the country they are frequently only a few feet in depth, and in many instances are open below and permit the ingress of fowls. Moreover, in

this city it is not possible for the cesspools to communicate with the water-supply as in the country. Does it not seem likely, then, in the absence of evidence to the contrary, that the *materies morbi* in these cases was brought here from the country in the food?

There are a few old wells still open in various parts of the city, and a small number of people use water from them during the summer. It is possible that some cases of the disease arose from the use of this water, but the matter was not examined sufficiently to warrant an opinion.

These investigations were made with as much care and labor to find the truth as it is possible to bestow by one who is otherwise engaged, and the writer believes that they will compare favorably with the best work of this kind, and that in accuracy of detail they are far superior to statistics furnished by the health offices. A large part of the spare time of the writer and an assistant was given to the work since the beginning of 1890.

What are the inferences to be drawn from it?

First, that the conditions are more favorable in the country than in the city for the propagation and dissemination of the microbe which causes typhoid fever, and that in Berks County typhoid fever is distinctly a rural disease. This inference is supported by the facts that the disease is more than twice as frequent in the country as in the city; that no food-material is taken from the city into the country which is not equally distributed in the city, and which would not produce like effects in both places; that varieties of food are brought from the country to the city which are not obtained from other sources, and that the disease has followed the distribution of some of them in the city, especially the milk; that the consensus of opinion in the profession is, that the germs of the disease are in nearly all cases imbibed with food and drink; that the conditions necessary for contamination of the food and drink in the city exist in the lowest possible degree; and that water, which is in everything we eat and drink, and is everywhere present, and is probably the principal carrier of the germs of the disease, is more frequently polluted in the country than in the city.

Second. That preventive measures against typhoid fever cannot be successful in cities until a board of health is established in each county, the authority of which shall extend over the whole county, and which shall have a number of active representatives in various parts of the county who will report cases of contagious disease and search for their causes.

The necessity of such a board of health is illustrated by an incident which came to my notice last year. A lady told a doleful story of one of her market-women, who said that she had that day one daughter lying dead from typhoid fever and another at the point of death. And yet this woman came to market with butter, cheese, and other manufactured articles in which was water from her spring or well which in all probability spread the disease in her family.

This is only one of many similar occurrences which inquiry would discover in the markets of Reading.

Third. The Board of Health of the city of Reading, with its present powers and its present methods of work, is of no practical use, beyond being a convenience to the citizens for the abolition of open and glaring nuisances, and the tabulation of births, deaths, and marriages. The contagious-disease records, so long as only one case in four is recorded, are utterly useless for any purpose. It must be said, however, that this fault lies not with the Board, but between the laws which created it and the physicians who are expected to report cases of contagious diseases but fail in three cases out of four. The error in the law lies in its failure to compensate physicians for making out certificates of disease, and there is no reason to expect physicians to do this work carefully without remuneration. A small fee paid for such service would undoubtedly make it much more efficient, but it should be small, to prevent abuse in the other direction. To guard against the issuing of false certificates, the signature of the head of the family might be required in addition to that of the attending physician.

Fourth. All boards of health should possess sufficient money, power, and inclination to push their inquiries beyond mere tabulation of cases of disease; and unless they search for and remove causes of disease their work is of very little value. There are no reasons why an agent of the Board of Health should not follow every case of contagious disease, and examine its environment in every feature—the water- and food-supply, the source of the milk, the condition of the cesspool, and everything which might possibly affect the well-being of the invalid. If this were done, our boards of health would, in all probability, in a few years be able to trace every case of contagious disease to its origin, and, of course, to recommend successful means of prevention.

THE CHEMICAL RELATION OF OZONE AND HYDROGEN PEROXIDE.

BY CHARLES HENRY BROWN, M.D.,
OF NEW YORK.

I HAVE been much interested in the study of ozone and in the investigation of its chemical nature, and have recently, with the aid of Dr. Stanley Wyndham, endeavored to unravel the enigma of why peroxide of hydrogen, H_2O_2, should generate

O_3. This was suggested to me by recent articles on the subject, especially those of Drs. Gibier[1] and Aulde,[2] who both associate ozone with peroxide of hydrogen. Another reason which prompts my presentation of the following chemical *résumé*, is that both ozone and hydrogen peroxide in various combinations are destined to play important, yet different, *rôles* in therapeutics, and it is well to have a correct and practical idea of the nature of these compounds.

"The wonderful properties of ozone are but partly understood; like some other powerful agents, it cannot be safely handled, but it gives great promise in the future. The statement has been made that ozone is but an allotropic form of oxygen, and that it is identical with hydrogen dioxide (the subject of the present article), and for all practical purposes, from a therapeutic standpoint, they may be considered substantially the same." (Aulde.)

"It is worthy of notice that water charged under pressure with fifteen times its volume of pure oxygen has not the antiseptic properties of peroxide of hydrogen. This is due to the fact that when the peroxide is decomposed nascent oxygen separates in that most active and potent of its conditions, next to the condition or allotropic form known as ozone. Therefore it is not illogical to conclude that ozone is the active element of peroxide of hydrogen." (Gibier.)

It is considered that oxygen is capable of three allotropic modifications, viz.:

O_2, ordinary (unactive) oxygen; O_3, ozone; and O_1, active oxygen.

The latter form of oxygen (O_1), which only exists in *status nascendi*, is the most powerful oxidizing agent known, and is capable of combining with inactive oxygen (O_2) and forming ozone (O_3). Ozone is also a powerful oxidizer, in fact not much less so than O_1, and as it is only formed in the presence of O_1, a distinction is in many cases difficult, and the chemical action is often ascribed to ozone, as for instance, as stated above, in the case of hydrogen peroxide (H_2O_2), the oxidizing agent of which is not ozone (O_3), but nascent or active oxygen (O_1).

The following distinctions, arranged according to Baumann,[3] still further show the difference between ozone and hydrogen peroxide, and the relation that O_1 bears to each.

1. Active oxygen combines with inactive oxygen forming ozone, which is easily demonstrated in all cases in which its formation is not inhibited by the presence of easily-oxidizable bodies.

2. Active oxygen oxidizes water, and forms hydrogen peroxide. This does not take place when ozone acts on pure water (*vide* the following experiment).

3. Active oxygen oxidizes the nitrogen of the atmosphere forming nitrous and nitric acids. Ozone has no effect on nitrogen.

4. Active oxygen oxidizes carbon monoxide to carbonic acid; this is effected by ozone.

Positive (O_1) and negative active oxygen (O_1) act essentially in a similar manner. It is certain, however, that the action of hydrogen peroxide (H_2O_2), whose oxygen according to Schonbein is positive, is much less intense than that of ozone, O_3. Ozone is a gas, hydrogen peroxide a liquid, and this fact alone necessitates a different action of the two toward various bodies. In both (apart from the positive or negative electricity, a difference which may be safely assumed) the oxidizing factor is O_1; in the one compound bound to inactive (latent) water, in the other to inactive oxygen. The following tests may suffice to prove the different action of H_2O_2 and O_3 on other bodies, and also serve as a distinction between the two compounds.

If an aqueous solution of a basic lead salt[1] be added to a solution of hydrogen peroxide a reddish-brown precipitate, accompanied by an evolution of gas, is formed. Even in very dilute solutions the browning of the precipitate is perceptible. With aqueous solutions of basic copper salts, a black precipitate of copper peroxide is obtained which soon turns bluish-gray, and finally becomes light-blue cupric hydroxide; if the solution of the peroxide of hydrogen is concentrated an evolution of gas may also be observed. Ozone, on the other hand, effects no change in these two reagents, neither is there any evolution of gas.

A further distinctive reaction is given by chromic acid. If a few drops of a solution of the latter and some ether are added to a solution of hydrogen peroxide, and well shaken together, the solution assumes a beautiful blue color, owing to the formation of perchromic acid, and on allowing it to stand the color is taken up by the ether and a deep blue layer separates out. Even in very dilute solutions of peroxide the blue coloration is still distinctly discernible. Ozone in gaseous form or in solution does not affect the chromic acid.

It has been stated that a solution of ozone in water resolves itself in time into peroxide of hydrogen. To prove that this is not the case, I tested solutions of ozone which were six weeks old, and which had been exposed to the air several times. They still gave all the ozone reactions, but were not affected by chromic acid; if the slightest trace of hydrogen peroxide had been formed, its presence would have been shown by a blue coloration.

Permanganate of potassium is immediately discolored by peroxide of hydrogen, brown oxide of manganese being formed, accompanied by a strong

[1] Peroxide of Hydrogen and Ozone. Paul Gibier, M.D. THE MEDICAL NEWS, October 25, 1890, p. 416.

[2] Hydrogen Dioxide—A résumé. John Aulde, M.D. New York Medical Journal, 1890, p. 711.

[3] Zeitschrift für Physiol. Chemie, vol. v.

[1] Gawalowski; Rundschau, 1889.

evolution of oxygen gas; whereas, if ozone is passed through a solution of permanganate of potassium, the latter remains unchanged.

Very interesting is the action of ozone on egg-albumin. If a saturated aqueous solution of egg-albumin (having a very slight yellow color) be treated with ozone, it rapidly assumes a golden-yellow coloration, very similar to the color of undiluted egg-albumin. This ozonized albumin does not coagulate, even when heated up to the boiling-point.

If the same aqueous solution of egg-albumin be treated with hydrogen peroxide, the color is not changed, a strong evolution of gas is observed, and on the application of a slight degree of heat the albumin is coagulated.

It has been established by various investigators that the molecular formula of ozone is O_3. Andrews and Tait[1] demonstrated that ozonization is accompanied by a change of bulk. In the formation of ozone three volumes of oxygen are condensed to form two volumes of ozone, which, when heated, increase in bulk to form the original three volumes of oxygen; whilst, when acted upon by potassium iodide, one-third of the ozone is spent in liberating the iodine, and the other two-thirds go to form ordinary oxygen, thus: $O_3 + 2KI + H_2O = O_2 + I_2 + KOH$. This supposition has been proved to be correct by Soret,[2] as follows: Many essential oils, such as turpentine and oil of thyme, were observed by Schonbein and others to possess the property of absorbing ozone without decomposing it, and Soret showed that the diminution in volume which takes place on the absorption of the ozone by these oils is exactly twice as great as the increase of volume observed when ozone is decomposed by heat.[3] A series of three experiments proved that for every 19.3 c.c. of ozone absorbed by the oil, 9.47 c.c., instead of the exact number, 9.65 c.c., of common oxygen were formed on heating. These various experiments conclusively prove that dry oxygen is converted into an allotropic modification possessing the molecular formula O_3 (ozone), three volumes of common oxygen having been condensed to two volumes by the formation of ozone. In regard to its volume, the molecule O_3 simply obeys the law of Avogadro,[4] by occupying the space of two atoms of H, consequently $3O_2 = 2O_3 = 2(O_2 + O_1)$. In a given quantity of oxygen there is only a small proportion transformed to O_1, a number of molecules of O_2 remain unchanged, and to these the molecules of O_1 attach themselves and form O_3. As, however, the union is effected with but little force, the newly-formed molecule O_3 contains two firmly-bound atoms and one loosely-bound atom, and this latter one can act chemically in a similar manner to a free atom. In oxygen, O_2, each atom is doubly bound to the other $O=O$; in ozone each atom is bound singly to the other, and if a reductive body comes into contact with this lightly-bound molecule, the action is much quicker and more intense than with a molecule of ordinary oxygen. It is due to this single atom O_1 alone that this great activity takes place; O_2 alone, for instance, is incapable of oxidizing indigo to isatin, but O_1 (as contained in ozone) accomplishes this in a short space of time.

$$C_8H_5NO + O_1 = C_8HN_5O_2.$$

It is right to conclude that hydrogen peroxide and ozone are different compound bodies, and that both depend for their great activity upon the availability of the unsaturated atoms of O_1. And the question as to their differences relates to the varying availability of these unsaturated atoms, no matter whether charged with positive or negative electricity, or whether the O_1 is derived from O_3—H_2O_2—Mn_2O_7, or elsewhere.

Ozone, up to the present time, has played but a slight *rôle* in practical medicine. This has been chiefly on account of its not being generated easily and because it cannot be kept long. I have, through the kindness of the Ozone Manufacturing Company, of New York, been able to satisfy my mind upon the fact of the practicableness of ozone, both as ozonized oxygen and in various preparations, and of the marked essential differences that will be found between this body (ozone) and hydrogen peroxide in therapeutics. Each will have its special field of action, and it is only right not to confound one with the other; and to speak of hydrogen peroxide depending upon ozone as the active factor is as erroneous as to say, "Ozone depends upon water in combination to act as an oxidizing agent"; or to say: "If ozone is combined with water it is hydrogen peroxide."

25 WEST FORTY-FIFTH STREET.

[1] On the Density of Ozone.

[2] Philosophical Magazine, 31-34.

[3] Other experiments have shown that the essential oils of cassia, cinnamon bark, and spruce absorb ozone readily.

[4] The number of molecules contained in the same volume of every kind of gas is the same.

NEW PROBLEMS OF NUTRITION IN HEALTH AND DISEASE.[1]

BY A. B. MACALLUM, B.A., M.B., PH.D.,
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THE use of iron in anæmic conditions is nearly as old as the history of medicine, and it has always been regarded as one of the most precious remedies that we have. Even in popular opinion it has its place, although it has won this position since chemical analysis first showed its presence in the blood-

[1] Delivered as one of the lectures of the Post-graduate Medical Course of the University of Toronto, December 20, 1890.

pigment. How the remedy effected the removal of the anæmic condition was not explained until after the same demonstration.

The first theory worthy of attention was put forward by Fourcroy, who believed the blood-pigment to be a solution of basic phosphate of iron in albumin and that he could form thus the destructive coloring-matter of the blood. Others at the same time described the gradual change to red of the coagulated chyle, when the latter was exposed to the air, and it was further stated by some observers that the chyle from the thoracic duct, especially from that of the horse, undergoes this pigmentation even before its removal from the duct. These observations, although not found correct by skilful observers, among them Johannes Müller, served for a long time as a support to the theory of Fourcroy.

Our more modern theories have not advanced much beyond this one. At the present day the view most prevalent amongst the exponents of medical science is that the iron salts of the food unite with the albumins to form albuminates which, in some way, pass into the system to give origin to hæmoglobin. It was never explained in what way the unstable and weakly-combined iron albuminates became converted into a compound in which the iron is so firmly combined that the chemical tests for the metal fail to show its presence. Still the facts that iron in some form is detectable in the foods and that it is present in hæmoglobin were strong enough to silence almost wholly all criticism of the theory. The advocates of the theory pointed to clinical experience. The administration of iron in ordinary anæmias and in chlorosis has been followed in countless cases by marked and permanent improvement. The cause of these abnormal conditions has been always considered a defective supply of hæmoglobin, and the long-continued dosing with iron resulted in an increase of the hæmoglobin in the blood. These being the facts, no other interpretation than the prevailing one could be heard.

Recently, however, Bunge[1] came forward with another theory, built upon the results of his experiments on the nature of the iron-holding compounds in the yolk of the hen's egg. As this theory is, in my opinion, destined, in a modified form, to supplant the one just described, it is worthy of an extended description here. It is well known that the hæmoglobin of the blood of the chick is formed out of compounds present in the yolk. What these compounds are no one knew until Bunge analyzed them. On the basis of the older view the yolk was assumed to contain an inorganic iron salt. Bunge, by methods which I need not describe, isolated an iron-holding compound of the nature of a proteid, but containing phosphorus and therefore belonging to the group called nucleins. Like the latter it does not dissolve in gastric juice; in other words, it cannot be converted into peptone, and it dissolves in alkaline solutions, from which it may be precipitated by acids. Its iron is not removable by the hydrochloric acid of the gastric juice, and is only so separated when the acid solution is considerably more concentrated. The ordinary alkaline sulphides, such as ammonium sulphide, attack the compound and separate the iron as sulphide when both are kept at or near body temperature for several hours. This iron-holding nuclein Bunge called hæmatogen because he considered it to be the substance out of which the chick's hæmoglobin is produced, and as he determined the existence of similar iron-holding nucleins in milk, and in that part of our food furnished by the cereal and leguminous plants, he concluded that the hæmoglobin of the blood of all animals is directly or indirectly derived from the iron-holding nucleins of the vegetable kingdom. In the animal body these compounds are assimilated in some way and the assimilated product appears as hæmoglobin.

The benefits obtained from the exhibition of iron in simple anæmia and chlorosis are explained by Bunge in the following manner:

In ordinary anæmia, for example, there are in the intestine more or less putrefaction and fermentation due to lack of digestive vigor on the part of the stomach, which permit, therefore, a freer entrance of bacteria than in health. In this putrefaction alkaline sulphides are formed; these act on the iron-holding nucleins and separate their iron, which is excreted with the fæces as sulphide. If, however, sulphides are abundant, all the hæmatogens are decomposed, their iron is removed, and the system consequently deprived of the usual supply of that compound necessary for the formation of hæmoglobin. Should this condition continue long enough the results are a marked diminution in the quantity of hæmoglobin and an asthenic condition due to the deficient respiration of the tissues. Could these sulphides be decomposed and rendered inert in some way, the hæmatogens might be saved for assimilation and the anæmic condition thereby removed. Iron and iron-salts readily effect this decomposition by combining with the sulphur of the sulphides, and if administered in large quantities the whole of the alkaline sulphides is thereby disposed of. The hæmatogens, which are thus protected from decomposition, can consequently be absorbed as such, and as the digestive and secreting vigor of the stomach gradually returns with the increase in the amount of hæmoglobin in the blood, intestinal putrefaction is diminished and the alka-

[1] Zeit. für Physiol. Chemie, Bd. x. p. 49.

line sulphides cease to be formed in considerable quantities. In Bunge's view, therefore, the administration of iron to anæmic and chlorotic patients is for the purpose of protecting the iron-holding nucleins from decomposition.

Sometimes the administration of hydrochloric acid, without any iron at all, removes the anæmic condition, and Bunge believes that this happens especially in those cases in which the gastric juice is deficient in quantity and therefore feebly germicidal.

In support of Bunge's theory it may be considered as established that the whole or nearly the whole of the iron salts administered with the food passes out with the fæces as sulphide. Furthermore the most careful experiments of Hamberger[1] show that iron-salts given in the food are not assimilated into the system, and consequently it is improbable that there can occur in animal tissues a synthesis of hæmoglobin from iron salts and a proteid or proteids of the food.

It may be urged that the synthesis of an iron salt and a proteid may take place in the body, and yet the facts in support of this may be so difficult of access, that experiments in the chemical or physiological laboratory may not show them. Again, since the amount of iron in the blood of an adult individual averages 3 grammes, and since in health the amount of iron in the urine—assuming this to be the only mode of excretion[2]—is from 3 to 5 milligrammes daily, it is obvious that if inorganic salts are absorbed by the intestine to make up for this loss not more than 1.5 grammes of the metal are so utilized in a year. Now this quantity is so small as to be beyond estimation, when one has to take into account that in a year an enormous quantity of food is ingested and a large quantity of matter excreted as fæces and urine. In fact the errors of experiment would be vastly greater than 1.5 grammes. This objection is, I think, well taken, and unless it can be shown that such absorption of inorganic iron compounds is unnecessary or contrary to our knowledge of animal metabolism, it will be fatal to Bunge's theory.

We must, therefore, turn to the teachings of biology on this point. It is a well-known fact that plants cannot grow without access to iron salts in the soil. If a plant is reared in a solution containing all the other chemical ingredients necessary for its nutrition, but absolutely free from iron compounds, it is completely colorless; in other words, it fails to develop the green coloring-matter which is generally credited with the power to build up, under the influence of sunlight, starch from the carbon dioxide of the air. It was at first suspected from this that the iron entered into composition with the chlorophyll, or was associated with the latter in some way. Such a connection, however, has never been observed, and all solutions of chloropyll are free from iron. What is done with iron in the vegetable cell was not known until the results of Bunge's researches were published. We now see that it is united with the nuclein so firmly that the ordinary tests for it fail to reveal its presence. There can, therefore, be no doubt of the absorption and assimilation of iron by the vegetable organism. Indeed, one can see this clearly when one strokes a bleached plant grown in an iron-free solution, with a glass rod moistened with a weak solution of an inorganic iron compound. Some hours after doing so there is along the line of the streak a green color, showing that, in that time, the cells have so vigorously absorbed iron as to enter on their full functions.[1] Now the absorption of iron is so prominent in plants that we may say it is a special vegetable function. We are, moreover, in the habit of drawing broad lines of distinction between vegetable and animal metabolism. We say that the vegetable-cell builds up chemical compounds out of simple chemical substances, and stores up energy from the sunlight, and in contrast that the animal cell decomposes the same compounds and derives therefrom its energy. In the animal-cell any formation of complex compounds out of simple chemical compounds is impossible. It is true there are views current that fats are partly derived in some way from the starchy part of food, but these views cannot be held to vitiate the conclusion already given until it is finally and definitely shown that the absorbed carbohydrates of the food do more than protect from decomposition the fats derived as such from the foods, or the fats obtained by metabolism from the proteids of the food or of the body. Now, if construction of complicated chemical compounds out of simple ones is a function of the vegetable-cell, while the animal-cell decomposes the same compounds, but does not build up, why should we make an exception as to the formation of iron-holding proteids in the case of the animal-cell? We know that in hæmoglobin the iron is very firmly combined, and it is even as firmly combined in the

[1] Zeit. für Physiol. Chemie, Bd. ii. p. 191.

[2] There are other channels for the excretion of iron. It is admitted that the bile contains iron compounds and it is furthermore shown in experiments in which animals are given iron-salts subcutaneously that the intestinal mucosa functions as an iron-excreting organ.

[1] Recent experiments and observations have rendered it extremely probable that it is the nuclear material in vegetable-cells which is the principal agent in the formation of carbohydrates out of simple substances, and that the carbohydrates so formed are passed from the nuclein to the chlorophyll grains, where they appear as starch. The inference from this is that the iron absorbed is fixed in the nuclear substance. See, on this point, Strasburger, Ueber Kern und Zellthilung, January, 1888, p. 194.

iron-holding proteids from the seeds of various plants. Why not say at once, as Bunge has done, that the hæmoglobin is derived from iron-holding proteids of the vegetable kingdom, sometimes directly, sometimes remotely?

There are a number of facts which tend to show that the broad distinction between the metabolism of the animal and that of the vegetable-cell holds good with regard to the iron-holding proteids. One fact is that obtained by a study of the transferrence of iron from the maternal organism to the egg in fish, amphibia, reptilia, and aves, or from the mother to the fœtus in mammalia. Bunge's hæmatogen is a compound carefully and elaborately prepared long before fertilization takes place, and as such it is deposited in the yolk-spherules of the egg. In other words, the embryo receives its supply of iron in the form of an iron-proteid compound, and it passes a certain part of its existence fully supplied from this source with all the iron it requires. Bunge has, furthermore, shown that the newborn mammal starts into the world with a larger quantity of iron in its body per kilogramme of weight than the older animal has. According to this observer, the iron of milk, the food of the suckling, is firmly combined with a nuclein. I may mention, too, that experiments and observations, such as those of my own, to be described further on, indicate, in the cat at least, that the maternal tissues transfer to the fœtus or embryo not an inorganic iron compound, but an iron-holding proteid. It is thus seen that the developing animal-cell or organism is carefully provided by the maternal organism with a supply of a firm, stable, iron-holding proteid, and that it receives iron in no other form. On the other hand, the vegetable ovum receives just so much iron as will enable it to develop chlorophyll enough for its seed leaves, after which its embryonic root furnishes by absorption all that is needed for its future growth. There is, therefore, a great difference between animal and vegetable organisms on this point. The vegetable-cell has manifestly and preëminently the capacity to combine iron with proteids, and it is equally manifest that the animal-cell, if it has this capacity, leaves it in abeyance in the embryo and in the suckling animal. The question now is, whether the cells of the adult animal have this capacity, and if so whether they use it. The treatment of anæmia and chlorosis seems, as already pointed out, to give an affirmative answer to these questions. The answer, however, is not quite satisfactory, for it must be noted that it is only in large doses that iron is effective in removing the anæmic condition, while only from 3 to 5 milligrammes are absorbed and assimilated in health, assuming that the 3 to 5 milligrammes daily excreted in the urine represent the total amount of the iron derived from the disintegrated hæmoglobin of the body. Is it to be supposed that even a very much greater quantity of iron, in the form of inorganic salts, is wanting in the food of anæmic patients? If the system is capable of building up iron-holding proteids, why is not this large quantity of inorganic iron compounds absorbed and assimilated in anæmic patients as it is, supposedly, in healthy individuals? Is the fault to be found in a lessened capacity of the system to absorb iron salts? If so, what explanation of this lessened capacity can be given? The current view as to the cause of anæmia is that there is too little of any iron salt in the food for absorption, an explanation not firmly founded. If there is too little iron in the food how comes it that in some patients chlorosis may disappear without the administration of iron salts at all, or that in others it may be removed by the administration of hydrochloric acid alone?

We are, therefore, driven back to Bunge's theory for the explanation of the mode of the absorption of iron in health, and of the action of iron salts administered to anæmic patients. Now it must be acknowledged that as far as it goes the theory is the most satisfactory one yet offered to explain the facts. I use the phrase, "as far as it goes," advisedly, because my own researches and observations show that the theory must be considerably extended to cover all the phenomena which they present. These researches were begun five years ago, and they have been carried on with varying intermissions up to the present time. So definite have the results obtained from them lately appeared to us that I thought a connected description worthy of publication, and I have chosen this occasion for explaining them, for discussing the bearings which they have on our knowledge of nutrition, and for putting forward explanations of my own as to the nature of certain diseases.

All of these researches bear on the chemistry of the animal-cell, and, as cytologists have always known more about the structure of the latter than have physicians, it may be interesting here to connect the plain facts of structure with those of composition. The animal-cell usually contains two different morphological elements, the cell-body and the nucleus. The cell-body contains what is usually termed protoplasm, but this is by no means a simple compound, for from it can be obtained albumin, globulin, albumoses, fatty compounds, and glycerin, while its membrane, as well as that of the nuclein, is formed out of a compound called plastin. Now, disregarding the non-proteid elements, we may say that the cell-body is generally made up of proteids, which are like one another in percentage composition, and which are mainly distinguishable from one another by precipitation-tests. In the nuclein, on the other

hand, there are present like proteid compounds, with a peculiar substance which is called *chromatin* by cytologists and *nuclein* by physiological chemists. The term chromatin has been given to it owing to its special affinity for staining reagents. It is sometimes more or less diffused through the nucleus, but usually it is in the form of small granules or clumps called indiscriminatingly nucleoli. When, however, the quantity of chromatin in a nuclein is increased beyond a certain point the nucleus and the cell pass through a series of structural changes grouped under the name karyokinesis, or cell-division, in which the chromatin plays a very important part. The nuclei of the two newly-formed cells have each exactly half of the chromatin of the original nucleus, and when the so-formed nuclei have increased their amounts of chromatin again up to a certain point the same series of phenomena occurs, resulting in the formation of new nuclei and cells. We may turn to other facts to illustrate the importance of chromatin for the life of cells. For instance, it is well known that the greater part of the substance of the head of spermatozoids is composed of chromatin, and it is chromatin only which is transferred to the ovum as the fertilizing agent. It is, in other words, the carrier of those qualities of the male parent which appear in the offspring. The vigorous embryonic cell, according to Minot, is rich in nuclear material—chromatin—while it is poor in cell material. The cells in the old individual present the opposite condition—the cell-material is large, the nucleus correspondingly small. We may say, then, that, other things being equal, the most vigorous cell is the one whose nucleus contains the largest amount of chromatin.

I have already said that the physiological chemist terms this substance nuclein. The latter name was given to it before it was generally thought by cytologists that there could be a specific element in the nucleus. It was isolated from the nuclei of pus-corpuscles, from semen, from the testicles, ovary, etc., and it was found to possess in addition to carbon, hydrogen, oxygen, nitrogen, and sulphur[1]—elements present in ordinary proteids—the substance phosphorus. Now, although nuclein is derivable from chromatin, I do not think the two are identical. In fact, I shall give reasons further on for regarding the nuclein molecule as merely the skeleton of the chromatin molecule. This is readily intelligible when one considers the thorough methods and the strong reagents by which the nuclein is usually prepared. It must also be remembered that if the chromatin is, as Pfitzner calls it, the ground-substance or physical basis of life, chemical changes are ever occurring in it, so that the chromatin compounds in two adjacent cells in the body may have quite different atom-groups tacked on to the molecule-chain. The nuclein, isolable from these two cells, however, would be either a mixture, or a compound very unlike the two chromatin substances which make all the differences in the life of the individual cells.

That this chromatin substance is different from the nuclein of Miescher and others I will now proceed to show.

In the summer of 1885 I observed certain staining-reactions in the nuclei of the red blood-cells of *Necturus lateralis* which were quite different from anything that I had ever seen before. At the time, I believed the peculiar staining-reactions to be due to a substance in some way or other connected with the production of hæmoglobin. A full opportunity to study the phenomena did not present itself till the following spring, when I obtained a number of *Amblystoma* larvæ, which I used in the investigation of this problem. I found that in the hæmatoblast the chromatin was excessively abundant, and just as the chromatin diminished in quantity in the developing red cells so the hæmoglobin increased.[1] I found, moreover, that the hæmoglobin is derived in the same cell from a substance which is diffused out of the nuclear chromatin, and even out of the chromatin loops of the dividing hæmatoblast. The conclusion then adopted was that the hæmoglobin is formed from the chromatin. Support for this conclusion was at that time found in the fact that Bunge had recently isolated an iron-holding nuclein, and in the fact that if the hæmoglobin is derived from the chromatin we may explain more readily the absence of a nucleus in the red blood-cells of mammalia, on the ground that the greater part of its chromatin is transformed into hæmoglobin, and that therefore, the necessity for a chromatin-holding organ is done away with.

During the next year I continued my studies on the origin of hæmoglobin in larval *Amblystomata* and in the spleen of adult *Necturi*, and in the following spring I definitely formulated the view[2] that hæmoglobin is derived from chromatin. *In other words, the chromatin of the hæmatoblasts must contain iron.*

I had in mind the fact that Bunge's hæmatogen is a nuclein. The question now arose, Are there nucleins which are not derivable from the nuclear chromatin, and what is their origin? The hæmatogen of Bunge is deposited in the yolk of the egg, not in its germinal vesicle, and if the latter has not, at any stage of its history, anything to do with the formation of hæmatogen it might be said that in the

[1] Some of the nucleins have been shown not to contain sulphur.

[1] This was previously noticed by Flemming and others.

[2] Presented as thesis for the degree of Ph.D. in the Johns Hopkins University.

developing hæmatoblasts of *Amblystoma* larvæ the hæmatogen of Bunge passes from the yolk-spherules to the nuclear chromatin, to be there converted into hæmoglobin, without the transformation of any of the chromatin itself into the pigment. In that case the presence of iron or iron-holding compounds in the chromatin would be merely a special case, and not of general significance. I studied the genesis of the yolk in the ovarian ova of *Necturus* and came to the conclusion that the nuclein present in the cell of the ovum is derived by diffusion from the abundant chromatin of the nucleus of the same ovum. That the nucleus of the developing ovum gives something to the yolk was already apparent from the observations of Scharff, Will, and Sheldon, but these investigators did not determine definitely what is so given. As Bunge found only one nuclein in the yolk it is very probable that his hæmatogen is the same as the chromatin diffused from the nucleus of the ovum.

Again, Bunge found the nucleins of milk to contain iron, and, therefore, to belong to the hæmatogen group. We know, from the researches of Nissen and others, that the cells of the secreting tubules of the mammary gland, after they have passed a series of changes resulting in the formation of fat-globules and the ordinary proteids of milk, break down, their nuclei undergo degeneration, and the chromatin is cast out into the contents of the lumen of the tubule to constitute apparently the milk-hæmatogen of Bunge.

In 1886 Zaleski isolated from the nuclei of the liver-cells of various animals a substance somewhat like Bunge's hæmatogen, but differing from the latter in that it holds the iron combined in itself much more firmly. This compound Zaleski evidently thought peculiar to the liver-cells, for he names it *hepatin*. It is probably the true chromatin of the hepatic nuclei. Owing, I suppose, to the fact that the liver is generally regarded as a blood-forming organ, and that, therefore, it is possible that one or more stages in the transformation of hæmatogens, or of iron-holding proteids into hæmoglobin, are passed in the liver, Zaleski apparently thought it quite natural that such iron-holding proteids should be found here.

(*To be concluded.*)

A CASE OF HYSTERICAL DEAFNESS.

By H. V. WÜRDEMANN, M.D.,
OF MILWAUKEE.

THE literature of hysteria is very extensive, but though hysterical deafness has long been noticed, very few cases have been reported, and the subject has not been as thoroughly investigated as other phases of this omnivagant disease. The case here reported is somewhat unique from the fact that the general sensation was impaired upon both sides to about an equal degree, and because there existed at the same time an intercurrent disease, which, at first, was sufficient to produce the ear symptoms, and to obscure the diagnosis.

Miss F. S., of German birth, was sent to me by Dr. Wahl on April 29, 1890, on account of interstitial keratitis and deafness; the latter affection was of two weeks' duration, and arose from a severe cold. The eye-trouble has existed for years, and the patient has well-developed Hutchinson's teeth. She is well nourished and somewhat stupid. Speaks both English and German. She was treated for "chorea" about two years ago.

She had well-developed catarrhal otitis media in both ears, and the secretion could be seen through the drum-membrane of the right. Hearing distance, right ear, by the watch, 8 cm.; left, 75 cm. (normal 150 cm.). The left ear was cleared by catheterization, but the fluid could be removed from the right tympanum only by paracentesis of the membrane. After the fluid was removed, hearing distance, R. $= \frac{15}{CL}$; L. $= \frac{120}{CL}$. It was noted at the time that the patient did not seem to feel the needle, but no investigation was made in regard to it. The ordinary treatment was used for the eye, and the ears were inflated by the Politzer bag several times until May 7th, when she complained that she was unable to understand the speech of the members of her own family, and her father, who came with her, corroborated this statement. She seemed to hear and understand everything that I said both in English and in German. The hearing seemed to be again increased by the use of Politzer's bag, but the watch could not be heard.

The next day she asserted that she was totally deaf. She could hear the voice, but could not distinguish any words. The low-pitched tuning-fork could be heard through the ear but not through the bone, and the fork of high pitch could not be heard at all. This condition corresponds with the statements of others in reference to hysterical deafness,[1] and first led to the suspicion of the true condition. The objective symptoms of the catarrhal inflammation seemed very slight, and the Eustachian tubes were open to Politzerization. There were areas of anæsthesia and analgesia embracing parts of the pinna, the auditory canals, and the drumheads of both sides in the same degree. The prick of a pin in the canal and the touch of a probe upon the drums gave rise to no pain. On her knees, feet, and hands sensation was lessened as far as could be ascertained from the patient, whose perceptive faculties seemed to be even more dulled, and who was evidently frightened by her symptoms. The knee-jerk seemed normal. The application of a magnet was tried as a means of diagnosis, as is recommended by several writers,[2] but as suspected without result. The electric current was also used with like result.

[1] G. L. Walton: Hysteria, Ref Handbook Med. Scien., vol. iii. p. 803.

[2] Politzer: Ohrenheilkunde, p. 520. Gruber: Ohrenheilkunde, p. 632.

The treatment adopted was mainly calculated to produce an impression on the patient. It consisted in the use of a sufficiently strong current of galvanic electricity to the ears and nape of the neck to produce a decided burning sensation. A blister was applied to the nape of the neck and the mastoid processes. The use of hot baths at night was recommended, and the previous alterative and specific treatment for the eye and ear was continued.

Three days later she could hear and understand words spoken in German, but not in English. The next day both languages were plainly understood, and the hearing-distance, by the watch, was R. = P (pressure of watch upon meatus); L. = $\frac{5^{0}}{CL}$. The patient was seen several times, and the previously-described treatment was used. She discontinued treatment some two weeks later, when conversation in both German and English was easily understood, and hearing-distance was R. = $\frac{3^{0}}{CL}$; L. = $\frac{15^{0}}{CL}$. The areas of diminished sensation persisted on either side, but in less degree. The membranæ tympani were restored to their normal appearance.

805 GRAND AVENUE.

CLINICAL MEMORANDUM.

OPHTHALMOLOGICAL.

A Case of Traumatic Paresis of Accommodation.—On the evening of July 6, 1890, Dr. W. was struck in the face by a boy from whom he was pulling a tooth. The blow glanced upward along the right side of the nose and reached the right eye with considerable force. For two hours the eye was painful; but after the pain ceased the circumstances of the injury were forgotten and not called to mind until four days later. On the day following the injury the upper lid was swollen, red, and sore. This condition slightly increased for four days, and extended into the cellular tissue around the eye. Pressure produced some pain, and the patient feared severe orbital cellulitis, but an unusual amount of work prevented him from receiving appropriate treatment. A few applications of liquor plumbi subacetatis, ½ drachm to 6 ounces of water, were made without much apparent benefit.

On the morning of July 11th Dr. W. noticed blurred vision of the right eye when looking at near objects. I examined the eye with an ophthalmoscope and by oblique illumination and found no evidence of iritis. The pupil was in no respect different from that of the other eye. One drop of eserine sulphate solution, 2 grains to an ounce of water, was instilled into the eye. The dimness of vision and symptoms of cellulitis diminished during the day. At night another drop of eserine solution, ⅔ grain to the ounce, was dropped into the eye. A weaker solution was used because the drop instilled in the morning produced strong, spasmodic contraction of the pupil.

The patient experienced no further trouble until the morning of July 13th, when he found that distinct vision for near objects was entirely gone in the injured eye, and great dilatation of the pupil—a mere rim of iris, $\frac{1}{16}$ or $\frac{1}{12}$ inch broad, remaining. For distance, V.=$\frac{6}{IX}$(Sn.), equal to that of the other eye. All symptoms of cellulitis had disappeared.

One drop of the weaker solution of eserine contracted the pupil and restored the power of accommodation. No further treatment was adopted, except the use of colored spectacles and rest. Slight paresis of accommodation returned after the effects of the eserine subsided; but this gradually wore off.

IDA R. GRIDLEY, M.D.

COLLINSVILLE, CONN.

ORIGINAL LECTURES.

A REPORT OF SIX CASES TREATED BY KOCH'S LYMPH FOR THE CURE OF TUBERCULOSIS.

A Clinical Lecture
delivered at the Philadelphia Hospital, January 28, 1891.

BY ERNEST LAPLACE, M.D.,
PROFESSOR OF PATHOLOGY AND CLINICAL SURGERY IN THE MEDICO-CHIRURGICAL COLLEGE; VISITING SURGEON TO THE PHILADELPHIA HOSPITAL, ETC.

[Reported by W. BLAIR STEWART, M.D.]

GENTLEMEN: I am under obligations to Professor Anders for the use of his hour this morning that I might present to you a few cases which have been treated in the hospital by Koch's lymph. In entering upon the subject, I take it for granted that you consider the question from the same point of view as I do, namely, that the tubercle bacillus is the cause of the development of tuberculosis; it develops at the expense of the tissues, liberating an irritant which causes a proliferation of the cells. These soon disintegrate, necrose, and change from a hyaline to a milky or cheesy mass. The cells have undergone fatty degeneration or coagulation-necrosis, as it is called, break down and, when in the lungs, form a cavity. This is the case where there are epithelial cells. The same occurs in fibrous tissue; the soil being different, the seed remaining the same. This was first proved by Koch in 1882, when he demonstrated the existence of the tubercle bacillus. He not only found, isolated, and stained the bacillus, but inoculated animals with it and always produced the same disease. I tell you this, so that you will understand that he did not stumble on the discovery; it was the outcome of eighteen years of hard and faithful study which finally culminated in extracting from the bacillus itself that substance by which he is able to destroy tuberculous tissues.

If any one of us were placed under such conditions that we had to reabsorb the urea produced, or breathe the carbonic acid gas from our lungs, we would soon die from its effects: so the germs die if they have to live in their own waste-products or, as we call them, *ptomaïnes*. Three years ago it was well known that Koch had been working constantly and had found something that would prevent tuberculosis in animals but with his modesty, he withheld the facts until he was forced to publish them by the Minister of Public Education of Germany. Until a few days ago, I could only surmise what the fluid he had discovered might be, but now we have had, as you know, a description of its preparation from Koch himself. Having isolated the tubercle bacilli, he cultivated them in artificial media—agar-agar or blood-serum and glycerin—collected them

and inoculated healthy guinea-pigs with the result that they contracted large ulcerated tuberculous patches, known as lupus, and ultimately died of the disease. Inoculating guinea-pigs that were suffering from tuberculosis with the same culture he found that there was no reaction.

The question then arose in his mind, if these are the results obtained with living cultures, what would be the result with dead cultures? He destroyed the same cultures with heat and antiseptics, injected some of this dead material into a healthy guinea-pig but did not get any reaction. He then injected it into a tuberculous guinea-pig with the result that the reaction was so strong that the animal died from dyspnœa in a few hours. All tuberculous guinea-pigs died within a few hours after an injection of a large dose of this dead culture. If this be the result with large doses, what would be the effects of smaller ones? Instead of giving one gramme he gave one one-thousandth of a gramme and found that the guinea-pigs lived and got better. He repeated the dose and the improvement was so great that the animals recovered. Here lies the foundation of the system we are now investigating. Therefore, we must give a small dose to know the effect; and, under these small doses, regional tuberculosis is checked.

We must divide our cases for study and treatment into two classes, viz.:

1. External or surgical tuberculosis, which comprises lupus—tuberculosis of the skin—and tuberculosis of the joints.

2. Internal or medical tuberculosis, including tuberculosis of the lungs and of other internal organs.

CASE. I.—Here is a woman who has had lupus involving her entire face, and her neck and back for more than forty years. It is now two weeks since we gave her the first injection. The remedy caused a chemical reaction that produced decomposition on the surface of the ulcers. In this case we were warranted in giving a larger dose than if the disease were internal, and within the two weeks of treatment the ulcers have healed. We proceeded about in the following manner: We gave five milligrammes and found that it caused a slight reaction. On the second day, we gave a larger dose and got more reaction. After this we gradually increased the doses until she received ten times the first dose, when the temperature rose to 102.5° F., and fell on next day to 99°.

Two days ago we gave her twenty-five times the original dose and scarcely any fever resulted, showing that, in spite of the increasing doses, the system was saturated with the material. I will now inject her with one hundred times the first dose to determine if she has received enough.

In order to preserve the lymph from decomposition when diluted, it is necessary to add one-half per cent. of carbolic acid.

CASE II.—Here is an interesting temperature-chart of this patient, who has been suffering from tuberculosis of the apex of both lungs, and also from hip-joint disease. He had a tubercular abscess with a number of sinuses for years. On one occasion it closed but soon reopened. Under injections of the lymph these sinuses and abscesses have closed, and he has shown signs of great improvement. Being a case of lung tuberculosis, as well as surgical, we were not warranted in giving him a large dose, which would excite inflammation about the tuberculous deposits and, if sufficient were given, would cause a violent pneumonia from which the patient would die—not from the lymph but from the pneumonia. We began treatment in this case with one milligramme and gradually increased the dose to three centigrammes, when his temperature rose to 104⅘° F. Finally we thought it best to let him rest for three days and then injected four centigrammes which caused an elevation of temperature to 104° F. An interesting fact in this case is that he was not very tuberculous and did not begin to react until he received two centigrammes. As soon as reaction to any degree takes place the temperature sinks below normal. As the patient has not reacted very much we know that his system is not saturated, and it will not be saturated until he ceases to react as the first case has done.

CASE III.—This boy has tuberculosis of the leg, knee, and ankle-joint. We began treatment by injecting one milligramme, then increased to five milligrammes, and later to one centigramme, when he reacted with a temperature of 104° F. Three centigrammes caused a temperature of 105° F.; six centigrammes 104.6° F. and this morning his temperature was normal. As far as the improvement in this case goes, the only thing we notice is that the dull, glazed, dirty surface of the ulcer has cleaned off and is assuming a healthy appearance. As far as the limb is concerned, the time is still too short to notice any great improvement, as in the case of lupus. The sinuses have swollen and a certain amount of serum and a piece of necrosed bone came from them, showing that a violent reaction took place. Should the tuberculous process in the bone be near the surface it would have separated more readily. The reaction in bone is the same as in other tissues, but the ability to heal is different in deep-seated lesions. At the last injection he received six centigrammes, and to-day we will give him ten centigrammes of the pure lymph.

CASE IV.—Here is an interesting case of a negress who had swollen glands in her neck and a peculiar eruption on her body that could not be positively diagnosed. In her case we tested the value of the lymph as a method of diagnosis. The day before it was used, her temperature was 104° F., while at the time of the injection it was 101° F. The lymph was used on alternate days and produced the characteristic rise of temperature that we would expect in a case of tuberculosis when treated by this method. After the injections the glands began to swell and became tender and sore, but assumed a normal appearance when the reaction passed off.

CASE V.—This man is the only case of tuberculosis of the lungs that we have treated with lymph in this hospital. For three years he has had a cough and we have demonstrated consolidation of the apex and the presence of bacilli in his sputum. After a dose of one milligramme he reacted, his temperature rising to 101⅘° F., and falling on the next day to 98° F. The second dose was two milligrammes, his temperature rising to 102° F.; a dose of five milligrammes caused a rise to 102.5° F.; twenty milligrammes to 102.5° F.; forty milligrammes to 103° E.; sixty milligrammes to 103.8° F., followed by a fall to 98.5° F. After the last dose the temperature rose to 100° F., showing that under increasing

doses the temperature does not rise so high and that the system is saturated with the lymph and the tuberculous tissue destroyed, He has not lost flesh, has a good appetite, and says that he feels better than at any time since he was first taken sick.

Case VI.—Here is a young man who comes to receive for the first time treatment for tuberculosis of the lungs. There is consolidation at the apex of each lung, and numerous bacilli in the sputum. Professor Koch wishes that no cases of tuberculosis of the lungs be treated at first with larger doses of the lymph than one milligramme, as this amount will serve as a guide as to the strength of future doses. If the patient does not react by the second day we will give him five times the original dose. If he should react strongly we will give twice or three times the dose.

From what I have said, it is evident that the lymph acts as an irritant. If used pure, under the skin, it would cause sloughing, but when diluted it is taken into the circulation and does not cause the local effects. The strongest argument against the identity of scrofula and tuberculosis is the fact that the tubercle bacilli are around the cheesy, degenerated mass and not in it. The reason the bacilli are not found in the middle of the mass (the understanding of this fact gives us the keynote of the Koch treatment) is explained thus: When the gland began to be diseased it contained epithelial cells; these cells were irritated by the bacilli, proliferated, and caused the gland to enlarge and degenerate or become white and cheesy. Just as these cells were destroyed, so the bacilli were killed by their own refuse matter. The bacilli can exist only where the proliferation is still going on; this is the reason we cannot find them in the cheesy masses. Koch found that by injecting the lymph into the tissues it was taken up by the blood, and caused the same condition in the tissues throughout the body, which would destroy the bacilli and induce necrosis of the diseased tissues.

Great care is to be taken in administering the lymph, for inflammatory reaction is certain to follow the injection. Should too much lung-tissue, or other tissue essential to life, be affected, the reaction would necessarily hasten a fatal result.

The French claim that the treatment gives rise to albuminuria and hæmaturia, but the cases cited by them may have been unsuspected tuberculosis of the kidney or bladder. Two weeks ago none of us suspected that the first case I showed you had lupus on her forehead, but after the use of the lymph a red spot appeared on the forehead and a distinct reaction took place there, showing that the germs were present. In one case in Europe a boy was inoculated, after which there appeared a patch of redness on his nose, indicating a process that would have ultimately caused lupus; this was not suspected before inoculation.

The contra-indications for the use of the lymph are—

1. *Extensive tuberculosis of the larynx*, unless you have taken the precaution to perform tracheotomy previously or are holding yourself in readiness to do it at a moment's notice.

2. *Acute miliary tuberculosis.* A few months ago I treated a man for fistula in ano. He came to me a short time ago to be treated with the lymph. I found his temperature 104° F., and crepitant and subcrepitant râles in his lungs, and diagnosed acute miliary tuberculosis. I think he would have died under the first injection, had it been given to him. At present he is running the characteristic course of the disease.

3. *Tubercular meningitis*—from the necessary reaction in the brain that would follow the injections.

You may ask if I have seen cures. Out of the two thousand cases that I saw in Berlin, I cannot say that I have seen one case positively cured, but I have seen great improvement. I cannot speak of the improvement as a cure, but can now only confine myself to clinical facts, inasmuch as a year at least would be required to pronounce a case as permanently cured.

There may be a possibility of aggravating and disseminating the disease by the lymph, but there is nothing to prove that these results occur. In five cases that died under the use of the lymph, the autopsy showed that in each case death was due to pneumonia produced by the irritation from the reaction, and no new foci of infection could be detected. I have seen a case like the woman with lupus that was discharged as cured; three weeks later some tubercles reappeared, but under treatment again promptly disappeared. I think we can draw the following conclusions:

1. Koch's lymph is a valuable means of diagnosis, as a non-tuberculous person will not react under its use.

2. It is destructive to tuberculous tissue, and acts more effectively on tuberculosis of the surface of the body than elsewhere from the possibility of the diseased tissue being shed.

3. The results obtained so far warrant us in using it to establish further its real merits.

4. We cannot restore destroyed lung-tissue, but if we can prevent tuberculosis in the beginning—that is, change the tuberculous soil of the patient, we could soon have the disease under as complete control as smallpox is to-day. In fact, when the irremediably-affected persons would die we could almost eradicate the disease.

MEDICAL PROGRESS.

Gargle for Tonsillitis.—The *Gazette Hebdomadaire des Sciences Médicale* gives the following gargle as a useful one in tonsillitis:

℞.—Metallic iodine		1½ grains.
Iodide of potassium, Tannin	of each	15 to 45 "
Water		2 ounces.

To be used as a gargle three times a day.

Lotion for Favus.—Kaposi recommends the following lotion in the treatment of favus:

℞.—Carbolic acid		75 grains.
Glycerin, Alcohol	of each	1 ounce.

After allowing this solution to remain on the part for twenty-four hours, and upon the removal of all hair, the head is to be washed twice a day with green soap. Aftes each washing the lotion should be reapplied.

Application for Cancer of the Uterus.—According to *L'Union Médical*, Braun recommends the following

mixture to be applied to carcinomatous ulcers of the uterine cervix.

℞.—Bromine . . . . 30 grains.
Alcohol . . . . 2½ drachms.

The surrounding parts should be protected by tampons. After the application the surface is to be covered with absorbent cotton, sprinkled with benzoate of sodium. At the same time narcotics are to be given internally to relieve the pain and insomnia. For the relief of vomiting pieces of ice or gaseous waters or small quantities of cherry-laurel water may be administered. Disinfecting vaginal injections composed of chlorinated lime, thirty grains to two drachms to a pint of water, should be given.

Prescription for Hæmoptysis.—DE MOUSSY recommends the administration of the following pills for hæmoptysis:

℞.—Powdered ergot, Powdered extract of rhatany } . 1 drachm.
Extract of belladonna . . 5 grains.
Powdered digitalis . . . 10 "

Make into forty pills and give from four to six at a time. Insist upon the patient's remaining in bed, apply heat to the extremities and allow the patient to swallow small pieces of ice.

Calmative Mixture for Hysteria.—According to *L'Union Médical*, GRASSET employs the following prescription in hysteria:

℞.—Chloral, Bromide of sodium } of each 1 drachm.
Extract of belladonna . . ½ grain.
Extract of cannabis Indica . ½ "
Syrup of acacia . . . 2 ounces.

Of this mixture from one to four teaspoonfuls may be given. If one teaspoonful is given it may be repeated every half-hour or hour until eight doses have been taken.

The dose may be placed in a tumblerful of infusion of orange-flowers. If pain is associated with hysterical insomnia antipyrine may be given, and it is well to administer arsenic, if the mixture, just mentioned, containing bromide, is used for any length of time.

Powder for the Treatment of Hay-fever.—*L'Union Médical*, January 10, 1891, gives the following prescription for the treatment of hay-fever.

℞.—Powdered boric acid . . . 30 grains.
Powdered salicylate of sodium . 35 "
Hydrochlorate of cocaine, finely powdered . . . . 1 grain.

This powder is to be snuffed up into the nasal chambers and if there be any ocular manifestations of the disease, collyria composed of weak solutions of sulphate of copper or of sulphate of zinc may be employed. It is also recommended that the patient shall inhale ten drops of the iodide of ethyl from a handkerchief; or six drops of the nitrite of amyl will be found useful if employed at the beginning of the disease.

Ergotine in Gonorrhœa.—According to *La Médecine Moderne*, ROICKI, a Russian, uses the following solution of ergotine with extraordinary success in the rapid cure of gleet. The ergotine is administered in pill-form by the mouth and by urethral injections simultaneously. Injections are made up as follows:

℞.—Ergotine . . . . . 5 grains.
Distilled water . . . . 1 ounce.—M.

Use as an injection several times daily. It is stated that these injections are well borne and that the same treatment is applicable to hæmorrhages from either the ureters or urethra.

Incompatibility of Calomel and Antipyrine.—A writer in the *Western Druggist* points out the fact of the incompatibility of these bodies, a gray color developing in them when mixed and after moistening. The change is due to a reduction of the calomel and a simultaneous change in the antipyrine. The nature of the change has not been elucidated, but that the combination is a dangerous one, the writer indicates by calling to mind the fact that the death of a child has been reported in New York City, the fatal result taking place within a short time after the administration of a dose containing these two substances. The lists of incompatibles of antipyrine that have hitherto been presented have not included calomel.

Antipyretics.—A study of the action of the antipyretics has led DRS. PODANOWSKY and POPOFF to the following conclusions:

1. The antiphlogistic action of the quinine salts, resorcin and thallin, is due to their specific influence on the heat-centres in the anterior part of the cerebrum, for after the division of the spinal cord even very large quantities of those drugs do not change the cerebral temperature.

2. The nature of this action must be inhibitory, probably following a primary excitation.

3. The absence of influence by the majority of antipyretics upon the surface-temperature of animals whose cords have been cut, and hence with unchanged excitability of the vasomotor centres, corroborates the hypothesis of a special vasomotor centre in the anterior part of the brain, which probably serves for increased heat-dissipation in cases of excessive heat-production.—*Wiener med. Presse*, December 28, 1890.

Subcutaneous Injections of Creasote in Pulmonary Phthisis.—The following formula for the subcutaneous injection of creasote is proposed by CASSIN and TOUSSAINT:

℞.—Creasote . . . . 1 drachm.
Oil of sweet almonds . . ½ "

According to Cassin, the injection should be made into the tissues immediately below the scapula and deep enough to get into the loose cellular tissue.

Gimbert employs creasote two and a half drachms and olive oil five ounces, thoroughly sterilized. For the thorough sterilization of the oil it is sufficient to raise the temperature to 120° C. The injection should be made very slowly and the fingers should be placed over the orifice made by the needle when it is withdrawn, in order to prevent any of the liquid from escaping.

In from five to ten minutes the breath of the patient has the characteristic odor of creasote, and this odor persists for several hours. The injections may be practised every two days. The result of their use is a diminution in the expectoration, a return of the appetite, and a disappearance of night-sweats. Gimbert asserts that he obtains definite cures by this method of treatment.

The contra-indications to the employment of creasote are fever and hæmoptysis. It is thought that the value of its use depends upon pulmonary hyperæmia. Those patients who have the chronic form of phthisis and little fever, present the best opportunities for successful treatment.

The Proper Method of Using the Uterine Dilator.—Professor H. A. Kelly (*American Journal of Obstetrics*, January, 1891) reports the case of a young woman whose cervical canal had been dilated with Wilson's and Ellinger's instruments. When Dr. Kelly first saw the case, four days after the operation, she had symptoms of septic peritonitis and a fœtid discharge from the vagina. On examination a rotten, coarse sponge, the remains of a tent, was found projecting from the external os. On removing this, a rent about three-fourths of an inch long, half an inch above the os, and opening into the peritoneal cavity, was discovered. Abdominal section was advised, but was refused until five days later, when it was done with the patient almost moribund, death following in a few hours. It was evident that during the dilatation a small hole had been made by the small dilator and torn widely open by the large instrument, the sponge-tent being inserted into the rent and insuring infection of the peritoneum.

In commenting on this case, Dr. Kelly writes that the liability of perforating an anteflexed uterus by sharp and strongly-curved instruments is so obvious that the accident has probably occurred more than once. In inserting a dilator force should never be employed, but the instrument should be delicately poised between the thumb and first finger and gently "persuaded" to enter the canal, the direction of which should have been previously determined. Further, the method of dilating the canal by screwing together the handles of the instrument, with no relaxation, almost invariably causes a long laceration, sometimes through the entire thickness of the cervix. Instruments with ratchet and screw devices are, therefore, to be condemned, and one with a simple spring between the blades to be used. In operating with such an instrument Dr. Kelly carefully inserts the blades, gently dilates the canal for a moment in one direction, then relaxes the pressure, rotates the instrument slightly and again gently dilates, repeating the procedure until the canal has been twice gently dilated in every direction.

Treatment of Fissured Nipples.—According to the *Gazette de Gynécologie*, the following lotion is useful for the treatment of cracked nipples:

℞.—Balsam of Peru } of each ½ drachm.
Tincture of arnica }
Oil of sweet almonds . . 1 ounce.
Lime-water . . . . ½ "

Mix, and apply to the fissured nipple after the infant has finished sucking.

Injections for Gonorrhœa.—In the *Journal de Médecine de Paris*, Silberminz is said to use the following mixture for urethral injections in gonorrhœa:

℞.—Salicylate of mercury . . 3 grains.
Distilled water . . . . 4 drachms.
Gum arabic, a sufficient quantity to make an emulsion.

Shake well before using, and inject a small syringeful into the urethra three times a day.

The Use of Iodol.—According to Egasse, iodol presents great advantages over iodoform as an antiseptic. The author employs it in a solution made in the following manner:

℞.—Iodol . . . . . 1 part.
Alcohol (95 per cent.) . . 16 parts.
Glycerin . . . . . 34 " "

For inhalations, Cervesato employs the following:

℞.—Iodol . . . . . 1 part.
Absolute alcohol . . 4 to 5 parts.
Glycerin . . . . . 10 "
Water . . . . . 10 "

The iodol is dissolved in warm alcohol, and then added to a hot solution of concentrated glycerin, when a yellowish-brown color occurs in the solution.

Pick is said to employ iodol by dissolving one part in five of ether; or, where small abrasions are to be covered, he employs iodol collodion made in the following manner:

℞.—Iodol . . . . . 1 part.
Ether . . . . . 10 parts.
Gun cotton . . . . . 5 "

An ointment may also be made by adding 15 grains of iodol to 2½ drachms of vaseline, or from 5 to 10 parts of iodol to 100 of lanolin. Iodol-gauze may be prepared in the same manner as iodoform-gauze.

Treatment of Otitis Media Purulenta.—Pentkovski, a Russian, uses the following treatment for this condition. After distending the Eustachian tube with the Politzer air-bag, he washes out the ear with a warm solution of the sulphate of sodium, of the strength of five per cent., after which he uses the following mixture, heated to about the temperature of the body:

℞.—Essence of peppermint . . 3 grains.

Dissolve in absolute alcohol 75 minims, and add

Distilled water . . . . 1½ ounces.

Mix, and label "For external use."

After the external auditory canal has been cleansed by this application, he introduces a tampon of cotton prepared by immersing it in a solution of one-half to one per cent. of the essence of peppermint in sulphuric ether. After ten or fifteen days of this treatment the suppuration diminishes, and finally ceases. In other cases he employs a powder consisting of boric acid which contains one per cent. of the oil of peppermint.

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PERTUSSIS AND ITS TREATMENT.

AMONG the diseases that have been proverbially obstinate in resisting our efforts to abort or shorten their course stands whooping-cough. The character of the disease is so complex, a mixture of catarrhal and neurotic phenomena, that authorities are still at variance in regard to its nature, and as to whether the catarrhal or the spasmodic element is the essential disease-phenomenon. That it has many features in common with diseases which are almost certainly of microbic origin has led to investigations that, unfortunately, cannot as yet be considered conclusive in regard to the presence of a specific germ. The curious nervous phenomena may at some future date be found entirely dependent upon the bronchitic condition, in which case the disease will resolve itself into an epidemic bronchitis. This view has been strongly urged and has been adopted by many, yet numerous careful observers still cling to the idea of a neurotic prime element.

The treatment of the disease has until lately been almost purely empirical, the two standard remedies formerly recommended for use as a routine practice being alum and belladonna. These drugs have their merits, but their field of usefulness has been more carefully defined in accordance with modern scientific therapeutics, while there are numerous remedies of later discovery that are fast gaining a foothold as either specifics or palliatives when properly used. A good *résumé* of the use of some of these remedies is given by DR. SICARD (*Revue de Thérapeutique Médico-Chirurgicale*, December 1, 1890), who briefly describes the methods of using and the virtues claimed for eight of the remedies whose employment is of recent date. His preference is evidently for antipyrine in frequently-repeated small doses. He denies that it acts both by its antiseptic and antispasmodic properties, and states that it is not a specific. In THE MEDICAL NEWS, December 13, 1890, DR. J. P. CROZER GRIFFITH publishes a paper confirming his former favorable report upon the use of antipyrine, and urges its employment in larger doses than those ordinarily used. Bromoform may be tried in cases in which the spasmodic element is marked and which antipyrine has failed to relieve, although it apparently possesses no advantages over the latter drug.

Among the older drugs employed for their antispasmodic action are belladonna and chloroform. The former of these, which has been used for so long a time with evident advantage against this and all other affections accompanied by spasm, cannot be omitted from the list of efficient remedies, while the place of chloroform may well be taken by its safer and equally-effective congener, bromoform.

In accordance with the view of the purely-reflex origin of the nervous phenomena of the disease many remedies for application to the throat and fauces have been highly recommended, but the exciting cause of the spasm, if it is in reality merely reflex, is probably seated too far down in the respiratory tract for such remedies to reach. Other remedies for topical application have been recommended on account of their anti-microbic action. Of these, resorcin and carbolic acid have been the most generally adopted. With a similar object the continuous inhalation of the fumes of sulphurous acid has been much practised, and possesses the great advantage that the method can be combined with the employment of other remedies, the patient merely sleeping in an apartment which has been subjected to the action of burning sulphur.

Against the catarrhal element we have lately acquired a valuable drug in terpine hydrate, which in the hands of some has given excellent results. This drug, or some of the older and more generally used expectorants, may be employed in selected cases with the addition of alum, the salts of zinc, or nitric acid, if the catarrhal products are in excess.

With such an array of antiseptics, antispasmodics, and expectorants we would seem to need nothing but a specific to complete our armamentarium. Although many of the remedies mentioned have been vaunted as specifics by their most ardent advocates, it is probable that before any such remedy is found we must have more exact knowledge of the true nature of the disease. In Dr. Sicard's article results are mentioned which are truly wonderful in their promptness as recorded by the originators or advocates of the various drugs. That others have been unable to obtain similar results in such a universally-similar disease as pertussis can be attributed either to imperfect observation by the successful or to a faulty carrying-out of the methods by the non-successful reporters. In all likelihood the latter is more frequently the cause of failure, and it should be constantly borne in mind that it is more harmful to make an unfavorable report upon a remedy that has not been *properly* used than to remain inactive in the field of therapeutic research. Probably, as Dr. Griffith remarks in the article referred to, failure to use the remedy in sufficientl-ylarge doses has been the cause of much of the disappointment to those who have been unable to obtain good results from antipyrine in this disease. That none of the drugs so far brought forward are specifics is probably true, but when properly used some of them have a marvellous power to control the spasmodic element, and thereby, indirectly, the vomiting and hæmorrhages that frequently cause an otherwise simple case to assume a dangerous character.

OBSTETRICAL ANTISEPSIS.

The features of obstetrical teaching that will make the strongest impression on the present era of obstetrical progress are the proper use of antiseptic precautions, and the results for good which have been brought about by a wise application of this principle. From the early work of Semmelweiss—that now represents the true foundation of all the progress that has since been realized in this direction—until the present time, there has been a continual effort made in all parts of the world to improve the results obtained in maternity hospitals, not only in the death-rate, but also in the febrile complications following labor. When epidemics of puerperal fever were common, and the death-rate in lying-in hospitals was truly murderous, that great obstetrician, Semmelweiss, was the first to realize that the trouble arose from the absorption of putrescent animal substances which had been deposited in or about the genital tract of the parturient woman. The precautions he took to combat the terrible death-rate (9.92 per cent.) of the Vienna Obstetrical Clinic were simply those of forbidding the attending physicians to perform autopsies, and requiring everyone who handled the patients to disinfect their hands previously with chloride of lime. Immediately after the institution of those precautions the mortality in his wards fell to 1.27 per cent.

For years the deductions of this much-underrated obstetrician were neglected and scoffed at. However, since the experiments of Pasteur and Lister have been widely studied, the principle of antiseptic cleanliness has been generally accepted and applied to all obstetrical procedures, and, in proportion as this principle has been carefully carried out, the results in different maternities have been improved.

In the *Transactions of the Obstetrical Society of London*, June and July, 1890, Robert Boxall, M.D., contributes an elaborate article on the subject of antiseptic precautions as carried out in the General Lying-in Hospital of London during the last seven years. For several years prior to this time, the hospital was closed on account of the terrible mortality which had attended its service. When the wards were re-opened in 1882, it was under a strict antiseptic *régime*. From July 1, 1882, to April 30, 1884, there were 612 admissions, and the death-rate was only 0.980 per cent. From May 1, 1884, to June 30, 1889, there were 2150 admissions, and, under an increased improvement in the details of treatment, the death-rate fell to 0.418 per cent. During the first period (more than a year and a half) the labors followed by fever from all causes amounted to 83.006 per cent.; during the second period, or until 1889, this was reduced to 40.651 per cent. This rapid improvement is a repetition of the experience of all modernized maternity hospitals. However, there is yet room for great improvement. A death-rate of 0.418 per cent. is about as small as any maternity may expect to attain, but fever following 40.651 per cent. of labors is enormous, and can be readily reduced. In this hospital apparently the same mistake is made that is so often made elsewhere. There seems to be a tendency to adopt the common idea, that if there is good in a little of any given remedy, there must be more good in a great deal of it. When patients are admitted to the hospital "they are immediately dressed in hospital

clothes, and, in all cases in which time will allow, the passages are irrigated with three quarts of antiseptic solution before delivery, the douches being repeated if the labor be prolonged. One or more such vaginal douches at a temperature of 115° F. are invariably given after labor is completed. The vaginal douche at a temperature of 110° F. is employed as a routine measure, night and morning, until the lochia have ceased." Is it not possible to account for at least a part of this large percentage of febrile complications by the too free use of mercurial douches? In Pesth, in a series of cases in which no injections whatever were used, 82.78 per cent. of the patients remained free from fever. In another series of 300 cases in Germany there were 94 per cent. with no fever. In Berlin, in a series of 422 cases, 90 per cent. remained free from fever. In Dresden, Leopold gives the following comparison: Of 1388 deliveries with injections, 17.2 per cent. had fever; of 1136 deliveries with injections and vaginal washings, 20 per cent. had fever; of 1123 deliveries with no injection at all, only 9.7 per cent. had fever. The antiseptic precautions in all these cases were applied to everything which approached the woman, but not to the parturient tract. It was assumed that the infection came from without, and not from within; and the results certainly warrant the conclusion. It would seem, from this, that we are still about where Semmelweiss left us.

The surgeons of the General Lying-in Hospital have found that, as in general surgery, the mercurial salts are the most efficient of the antiseptics. An extended trial of salufer, permanganate of potassium, and carbolic acid was made, but in every instance the mortality- and fever-rate exceeded that which occurred when the salts of mercury were used. From the fact that creolin has not been used in this hospital, it is to be presumed that there was a lack of confidence in its efficiency.

The good results attained in this hospital are further evidence that obstetrical cases can be safely used for teaching purposes. Although students are not admitted to the wards, yet there is a flourishing school of both nurses and midwives attached to the institution.

THE DIAGNOSTIC VALUE OF THE FIBRINOUS ELEMENTS OF THE BLOOD.

It is a well-established fact that, secondarily at least, the blood partakes in tissue-changes, and becomes more or less altered in constitution. There are strong reasons for supposing that the participations of this fluid in the phenomena of inflammation are not simply those of solution which are generally accepted, but that in such a condition it presents alterations in constitution not only in consequence of its assumption of the products of the cellular changes, but also to aid in the fulfilment of the inflammatory process. These changes are not so much alterations of the red corpuscles, as those variations in the fluid-elements by which the possibility of forming fibrin is increased. With this there probably coëxists numerical alteration in the leucocytes, or anomalies in their size. Such alterations are evidenced, of course, by the greater tendency of the blood to coagulate, and are present in order to bring about in the inflamed area a skeletal formation of fibrin upon which the regenerative changes shall occur. In the days of venesection such a condition, partly described under the term *hyperinosis*, was recognized; but with the gradual disuse of this procedure as a therapeutic measure, the hæmic fault was also allowed to fall into neglect. The microscopists are not entirely inculpable in this neglect of an important feature, since, in this country at least, with the possible exception of a few practitioners of questionable standing, practically no attention is paid to this matter; although there is little doubt that there exist certain quite perceptible differences in the manner of formation and the mode of arrangement of the fibrin in the clotting of blood in a number of different diseases.

According to Hayem, in his classic treatise upon the blood (*Du sang et ses alterations anatomiques*, par Georges Hayem, 1889), Masson recognizes three types of coagula: (1) that in which there exists a very intricate network of rather coarse fibrils with numerous and large accumulations of plaques; (2) that in which the coarse fibrils are present but fail to form so intricate a network, and in which the plaque-masses are not so marked; (3) that in which the network of fibrin is delicate and composed of very fine fibrils, remarkable also for their great numbers. The first of these types is referred by Hayem to such processes as the early stages of fibrinous pneumonia, acute rheumatism, the suppurative inflammations, etc.; the second to the beginning of inflammations of a somewhat diffuse character, and to secondary or symptomatic inflammations; the third to parenchymatous inflammation especially, and in some cases to symptomatic inflammation.

Following in this line, Oriou (*Archives de Méde-*

cine et de Pharmacie Militaires, October, 1890) claims diagnostic value for the microscopical examination of the fibrinous reticulum of the clot in the following conditions: *la grippe*, acute gastritis, and typhoid fever; pulmonary, pleural, laryngeal, and abdominal tuberculosis, and tuberculosis of the bones and joints; muscular and acute articular rheumatism, acute bronchitis, acute pneumonia; and in localized and diffuse suppurations. In the case of *la grippe*, Oriou states that this fibrinous reticulum becomes apparent in the early days of the affection; that as a rule it assumes the third type of Hayem, although in certain complications it changes to the second; and that it disappears with the disappearance of the fever unless there persist in the febrile state any visceral inflammatory conditions as gastro-intestinal catarrh or bronchitis. The character of the fibrinous reticulum in the blood taken from a case of gastro-intestinal inflammation, as from any other simple inflammation, largely depends upon the intensity of the inflammation, and the value of the phenomenon in these cases is particularly in the separation of a simple process from one of specific character, such as typhoid fever. In the latter disease the blood usually fails to present any fibrinous reticulum for the first seven or eight days and, as a rule, at no stage shows more than an imperfect reticulation.

Generally speaking, the same is true of tuberculosis and other specific processes. In these conditions there is no reticulation save in the presence of pronounced inflammatory complications, the specific process having no tendency to produce the phenomenon.

Of especial value from these considerations must be the determination of the presence or absence, and the character, if present, of the fibrinous reticulum in cases in which the nature of a disease-process located in the gastro-intestinal tract, in the pulmonary system, or in any other portion of the body, is questioned. For example, acute croupous pneumonia presents the most pronounced type of reticulation, of exceeding intricacy and composed of large heavy fibrillæ; a *grippal* pneumonia is apt to present a slight reticulation, one of the delicate forms, corresponding, as a rule, to type three of Hayem; typhoid pneumonia rarely presents reticulation at any period of the process; tubercular pneumonia should show but imperfect reticulation, if any, unless it be accompanied by considerable inflammatory reaction; rheumatism usually presents a marked reticulum in the clot of the first type of Hayem, and is readily separated from other localized painful affections by this peculiarity.

In the nature of things, the existence of such differences in the physiology of the most generally present tissue of the body is probable, and it is remarkable that so little attention has been paid to a subject of such importance. The technique of the examination is not especially complicated or tedious, and the apparatus required is simple. A drop of blood is placed upon a slide and the slide transferred to a moist chamber until coagulation has taken place, a cover-glass having been, of course, placed over the blood. The slide is then removed from the chamber and a delicate process of lavage carried out by dropping on one side of the cover a small quantity of distilled water so that it penetrates the reticulum, and drawing it through the mass by a bit of absorbent paper held in contact with the edge of the cover on the other side. By this means the red and white cells and plaques are removed from the reticulum, bringing it into prominence and permitting study of its characteristics. In this process of lavage a slide carefully and evenly grooved aids in the rapidity of the procedure and prevents in a great degree any damage to the reticulum. After the mass has been thus washed a drop of dye, such as rosaniline hydrochlorate, is substituted for the water and drawn through the mass in the same manner; the excess of dye is washed out with water and the preparation is ready for examination.

There is little to be said in comment. The possibilities in diagnosis are limited, but of such importance in their limitation that the general hesitation at even a tentative employment of the suggestion is inexplicable.

REVIEWS.

EINFUHRUNG IN DAS STUDIUM DER BACTERIOLOGIE. Von Dr. med. CARL GUNTHER, in Berlin. Pp. 244. Leipzig: George Thieme, 1890.

IN 1863, in Delft, Holland, the first recorded observation and recognition of bacteria took place, the observer, Leeuwenhoek, calling attention to his discovery of "animalcules" in the material which collects about the teeth and in various fluids of the body. The organisms were seen by means of a powerful simple lens, which he himself had ground. Since this date, the bulk of the work having been accomplished within the last thirty years, and chiefly in the past decade, our knowledge of these vegetable micröorganisms has grown from a few isolated facts into a science influencing every branch of medicine. Following the development of this science there has grown a vast literature; and the number of

bacteriological text-books is constantly increasing. Few of these are without reason for existence, the rapid strides of our knowledge in this field necessitating the multiplication of books. Of these books, however, few are destined to live beyond the first edition; and still fewer run any serious risks of ever becoming regarded as classics.

While the work of Dr. Gunther's is in no danger of this last possibility, it is far above the average of the numerous technical and descriptive bacteriological works. It is divided into three sections, the first treating of the general methods of bacterial technology, the second dealing descriptively with the pathogenic varieties, and the third with the non-pathogenic forms. Throughout the text there is to be noted an excellent feature in the recognition of the historical details of the various bacteria and methods, a feature almost invariably wanting in other works upon this subject. The references in the text are numerous and notably up to date, but it must be added that they are also notable because of their close adherence to German authorities. This same feature is quite as well marked in the recognition of the precedence for German investigators over those of other nations. These objectionable peculiarities, for such a characterization seems warrantable, may be pardoned, however, in view of the unquestioned success of the German nation as scientific investigators.

What may cause disappointment in this work to those who seek a bacteriologist's *vade mecum* is, that the writer has not recognized many of the media and methods employed in staining and culture, usually mentioning but a few of the well-tried ones. These are, however, fully and clearly presented. While this may be regarded as an excellence in the general portion of the book, in the descriptive portion (where every element should be mentioned as a possible factor in isolation) it must be looked upon as a serious omission. For example, the description of so important a microörganism as Eberth's bacillus of typhoid fever has received scarcely more than a brief paragraph, although two or more pages of text are devoted to the consideration of its history and the experimental researches touching upon its influence in the production of disease. In this case no ideas of mensuration are given. The same criticism may be made regarding other germs, especially those of the non-pathogenic varieties.

In relation to the many excellent features of the book as an introduction to bacteriology, these faults do not have by any means the prominence which might seem to attach to them. The clearness of presentation, the fulness of the historical and experimental considerations, the simplicity of plan, and the excellent photomicrographic plates, are sufficient to prevent the book from being seriously marred by the faults mentioned.

CORRESPONDENCE.

LONDON.

Mr. Jonathan Hutchinson on the Relationship of Lupus to Tuberculosis.

A few days ago Mr. Jonathan Hutchinson delivered an important lecture on "The Nature of Lupus, with especial Reference to its Relation to Tuberculosis," at the examination hall of the College of Physicians and Surgeons. It is, I believe, the first time that such a use has been made of the building, and the occasion was the commencement of the second London post-graduate course, in which, from its beginning, Mr. Hutchinson has taken great interest. The audience, which numbered about one hundred persons, included Sir Joseph Lister and Sir Andrew Clarke.

At the commencement of the lecture Mr. Hutchinson demonstrated the prominent features of the disease, as exemplified in a young woman whom he brought before his hearers, and pointed out how the disease tended to attack the areas especially concerned in flushing or blushing, and those much exposed, for example, the cheeks and tip of the nose. Premising that he approached his subject solely from a clinical point of view, he said that the first thing to consider was whether the typical form of lupus vulgaris is always of bacillary origin. There are two possibilities to be borne in mind: first, the lupus-process may be always due to the implantation of the parasite bacillus in the tissues, or second, the process may originate as a variety of inflammation, induced by any one of many local causes of irritation and nutritional change. He at once expressed his own leaning to the view that it is highly improbable that true lupus is always the result of contagion, and that it usually begins in inflammatory action made peculiar by the special proclivities of the individual. In his opinion, lupus is not always a well-defined and easily-recognizable disease, and no symptom or set of symptoms will enable one to recognize with certainty all cases of lupus, and to determine what should and what should not be included under that name. His definition of the lupus-process was given in the following words: "Whenever a chronic inflammation of skin or of mucous membrane, not due to syphilis, shows a persistent tendency to spread at its edges, to produce satellites near it, and to leave a condition of scar behind it, such a process is for me one of lupus. In a few cases the production of satellites may be omitted and the patch may remain absolutely single, but its infective edges and the resultant scar are essential. No form of lupus is without them, although it must be admitted, perhaps, that in a few the demonstration of the scar may be difficult. There is another condition which when present is to trained minds definitely diagnostic of lupus. I refer to the presence beneath a thinned layer of epidermis of a deposit or growth of semi-translucent granulation-material, often in considerable thickness. This 'apple-jelly-like' deposit, as it has been named, is, when present, perfectly characteristic of common lupus." Amongst minor features of the lupus-process he mentioned that if the surface does not ulcerate it is usually covered with white papery flakes of epidermis which, however, do not fall off; if the patch is ulcerated a dried crust forms, which, when removed, leaves a bleeding surface.

Lupus vulgaris is most common on the tip of the nose, the next most frequent seat being the cheek. It is not uncommon on the limbs but very rare on the trunk. The patches are never symmetrical. Though occasionally seen in children, it does not often develop until after the period of puberty. The lymphatic glands, lungs, bones, joints, and intestines, are never affected.

Nothing is less common than to see a lupus-patient develop phthisis. The most typical forms are often coincident with good general health, and with the absence of any family history of tuberculosis. He believes that lupus is as closely related to cancer as to tuberculosis, and that an unbiased statistical investigation would show that the latter association is not so frequent as is commonly assumed.

Reminding his hearers that syphilitic symptoms could imitate lupus, he said that since syphilis in its tertiary stage is only a chronic infective inflammation, deriving its peculiarities from the antecedents of the patient, and having nothing whatever to do with tuberculosis or bacilli, it is reasonable to suppose that lupus, which so exactly resembles it, might also be a process of chronic inflammation made peculiar by the vital proclivities of the patient. If lupus were of bacillary origin he thought it remarkable that in gland struma the skin does not assume a lupus-state and that the glands never become involved in lupus. Of primary tubercular ulceration of the skin he has had no personal experience but tubercular ulceration of mucous membranes presents characters quite distinct from those of lupus in that situation.

In conclusion he said, "I may own that the sum of the evidence seems to me much in favor of the belief that lupus is a specialized form of chronic inflammation rather than the result of infection. In suggesting this I am well aware that it is merely a negative conclusion, which is liable to be overthrown at any time by the accumulation of positive evidence. It may be that in the future the presence of bacilli in lupus-products may be demonstrated in earlier stages, and much more constantly than has yet been the case. The results of Koch's injection-treatment may possibly force us to believe that there is something about lupus which connects it far more closely with tuberculosis than I have admitted."

ABSTRACTS FROM "THE PICTURE OF PHILADELPHIA," ETC.[1]

IN an extremely interesting historical and statistical account of the city of Philadelphia, published in 1811,[2] with the keen eye and tastes of a physician, Dr. Mease has recorded many facts of deep interest to the medical historian. The few following extracts from this book, although loosely strung together, present an excellent picture of medicine in Philadelphia in the first decade of this century:

Philadelphia at that time consisted of nine original streets running east and west from the Delaware to the Schuylkill, and thirteen streets crossing these at right angles. The streets running east and west were named, with the exception of High (Market) street, for the native trees: Vine, Sassafras (Race), Mulberry (Arch), High (Market), Chestnut, Walnut, Spruce, Pine, and Cedar (South). The territory immediately outside these boundaries was called the "Liberties," as the people there were out of the city jurisdiction.

The population in 1810 was 53,722,[1] of whom 2 were slaves. Dr. Mease attributes the great increase in population over that of 1790 (28,522, of whom 193 were slaves), in spite of five epidemics of yellow fever, to the number of marriages and the inducements to immigration, and to a general improvement of the public health, due in part to the successful efforts of Dr. Rush in inducing the Legislature to arch over the Dock-street creek, which had become filled with mud, unfit for navigation, and a receptacle of an immense mass of animal and vegetable offal matters which poisoned the air by their exhalations. After this creek was thus covered in, he remarks that typhus fevers generally, and the fatal cholera, or bowel complaints of little children, diminished so evidently as to strike even common observers. Improvement was also due to "greater attention to cleanliness, to the institution of a dispensary for the poor, and to improvements in the healing art."

He remarks of the climate that a considerable change had taken place, the winters being less uniformly cold, the Delaware for many years past not affording the diversion of skating for more than two weeks at a time, and seldom so long. In the winter of 1779–80 it was frozen for three months, and an ox was roasted on the ice. The rain, in most parts of the United States, he says, falls in greater torrents than in Europe, and we know but little of those "fine, gentle showers" which, Volney says, "it is the fashion for people to go out to enjoy without umbrellas, and to get themselves wet to the skin!"

We read that "the death-rate is diminished by the very great improvements in the science of medicine and surgery. Many diseases now yield to the power of the healing art that formerly defied it. Thirty years since, the disease from drinking cold water in summer when the body was heated with exercise, the lockjaw, the croup or hives, mania, were seldom or never cured; but, at present, they are very rarely fatal when early assistance is given. The first-named disease is peculiar to the United States, and with regard to the last two it is asserted on good authority that the success in Philadelphia is infinitely greater than in Europe. Even the consumption, formerly a hopeless disease, has yielded, in numerous cases in this city, to the early and judicious application of medicine. The free use of wine in low fevers, of mercury, bark, opium, and the lancet, and warm and cold baths, has increased the empire of medicine over various diseases."

He further states that the character of our diseases is inflammatory, owing to the variable climate, and the general use of animal food and alcoholic stimulants. Hence the lancet is oftener required than the stimulating draught —to the astonishment of the European physician hearing of the depleting system of the United States and especially of Philadelphia.

An improvement, however, was taking place, due, among other things, in the author's estimation, to the substitution of malt liquors for punch, and to the use of flannel or muslin next to the body expelling the "dry gripes," formerly a fatal disease in Philadelphia. Important, also, says he, is the universal use of umbrellas,

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[1] Read before the Historical Society of the Johns Hopkins Hospital, by Howard A. Kelly, M.D.

[2] By James Mease, M.D. Philadelphia, B. & T. Kite, 1811, pp. 376.

[1] The whole population of the city and county of Philadelphia in 1810 was 111,210, while that of New York, embracing the entire island, was 96,372.

and the increased use of high-crowned hats, lessening diseases arising from the operation of the sun.

The mortality record in 1811 was made up by compelling the sextons of all churches to make returns of their burials. After stating the mortality, he says: "If the population of Philadelphia, as being greater than that of New York, be taken into consideration, the difference in favor of Philadelphia will be considerably increased." We read that the air of New York was more irritating, and persons who had spat blood in New York were entirely free from any pulmonic affection in Philadelphia.

There is an interesting account of the foundation of the Pennsylvania Hospital, first located on Market Street, west of Fifth. There were in this building, in all, 130 wards and rooms, of which 86 were apportioned to the lunatics and 23 to the sick and wounded. The lunatics being separated from the sick by the centre house, the latter were not incommoded by their noise. The library then contained 3000 volumes of choice medical books.

An amputation of a limb was not to be performed in the hospital unless a patient consented to it, nor then unless three physicians agreed.

"The present [in 1811] physicians are Dr. Rush, Dr. Parke, Dr. Wistar, Dr. Physick, Dr. Barton, Dr. Hartshorne, and the physician to the lying-in department, Dr. Thomas C. James."

In speaking of the University of Pennsylvania, he says: "In the year 1764 the foundation of the first medical school in America was laid by a course of lectures upon anatomy, which was delivered by the late Dr. William Shippen. His pupils amounted to ten. He was appointed professor of that branch, in the following year, by the trustees, and Dr. John Morgan, professor of the institutes of medicine. Both these gentlemen had graduated at Edinburgh, and had previously agreed to attempt the establishment of a medical school on their return. In 1768 Dr. A. Kuhn was appointed professor of botany, and in 1769 Dr. B. Rush was appointed to the chemical chair; Dr. T. Bond at the same time gave clinical lectures in the Pennsylvania Hospital. After bitter internal dissensions, in 1791 the seminary was erected now called the University of Pennsylvania, with the addition of chairs of natural history, law, and the German language."

The professors in the medical school were: Caspar Wistar, Jr., M.D., Professor of Anatomy; Benjamin Rush, M.D., Institutes and Practice of Physic and Clinical Practice; Philip Syng Physick, M.D., Professor of Surgery; John Syng Dorsey, Adjunct Professor of Surgery; Dr. Benjamin Smith Barton, Professor of Materia Medica, Botany, and Natural History; T. C. James, M.D., Professor of Midwifery; and John Redman Coxe, M.D., Professor of Chemistry.

For the loan of this interesting work I am indebted to my friend Dr. W. H. H. Githens.

NEWS ITEMS.

Lister's Work.—Lister's work since he took his first degree in 1852, has been of a character to command the respect and admiration of the scientific world. Receiving the first prizes in botany and anatomy when he passed the M. B. examination, he won the gold medal and the scholarship in surgery in the final examination. His papers on the minute anatomy of the skin, the physiology of the lacteal current, the contractility of the iris, the microscopic anatomy of involuntary muscular fibre, the relations of the inhibitory system to the visceral nerves, the regulation of arterial contraction by the nervous system, the early stages of inflammation, the coagulation of the blood, etc., stamped him at once as an original investigator of the first rank, and, as one of his biographers says, "would have sufficed to make his career memorable if he had never applied antiseptic measures to the treatment of disease." I have heard Professor Louis Agassiz years ago and later Professor Joseph Leidy say that, viewed from the standpoint of abstract science, his work had been of the very highest order and the appreciation of his labors by the best minds in our own profession has been enthusiastic and almost universal. Nearly every great surgeon in the civilized world has put on record his admiration for Lister's teachings, his acceptance of the general principles involved and his sense of almost personal obligation to the author of the antiseptic theory.

That Mr. Tait should speak of such a man as having "lived in the clouds of his spray for the last twelve years," as "wanting in logic," having "crude notions of logical definition," making "illogical blunders," "falling away from his own faith," promulgating an "absolute and ludicrous logical error," etc., and should make a boast of having "laughed at" and "ridiculed" him and his doctrines and disciples, is, it seems to me, evidence of his unfitness by temperament or training (or from lack of the latter) for the serious discussion of broad surgical principles. I am quite sure that the vast majority of general surgeons will be found to have no sympathy with either his views or his manner of expressing them, and it is a relief to find that in his own special line there are operators of equal eminence who repudiate both. In an address on "Abdominal Surgery, Past and Present," recently delivered before the Medical Society of London, its president, Mr. J. Knowsley Thornton, said: "I am not ashamed still to use the spray and all the precautions which have advanced my results in ovariotomy to 1.88 per cent. mortality (as against Bantock's 4 and Tait's 3.3 per cent.), and I find increased practice and a steady adherence to methods which have yielded me good results in the past increase in like ratio my success in all abdominal operations. Every operator of prominence improved his results enormously as soon as he adopted Listerism; then, having learned how to be surgically clean, he has found for himself ways of attaining this end with more or less success by methods differing from those of Lister. The sum and substance of it all is, that if we never had Lister to teach us true cleanliness, we should never have used antiseptics, flushings or drainage-tubes to attain it." —Dr. J. William White, in the *Annals of Surgery*, January, 1891.

Dr. Norman Bridge, Professor of Clinical Medicine and Physical Diagnosis in Rush Medical College, Chicago, has been compelled by ill-health temporarily to abandon his professorship and practice. He has gone to Los Angeles, California.

Compulsory Vaccination in Egypt.—By a Khedival decree which was published in the *Official Journal* of

Cairo on December 17, 1890, the vaccination of infants is made obligatory throughout Egypt and its dependencies Every child is to be vaccinated within three months from its birth, except in case of illness, when a medical certificate of postponement is to be obtained. Arrangements are made for the gratuitous performance of the operation, and the duty of securing the vaccination is imposed on the child's father or guardian under pain of a fine or imprisonment. The decree went into operation on its publication December 17th as regards natives, but three months' grace is allowed to foreigners. —*British Medical Journal*, January 3, 1891.

New Jersey State Medical Examination.—The following were the questions of the Medical Examining Board of New Jersey at the meeting of January 8 and 9, 1891:

SECTION I. *Materia Medica and Therapeutics.*
(William L. Newell, M.D., Examiner.)

1. What medicines are incompatible with cinchona?
2. What preparations of quinine are best adapted to subcutaneous use?
3. Give a test for iodide of potassium?
4. What is chloroform? What are its physiological effects?
5. What is the treatment for an overdose of aconite?
6. What are the vegetable acids?
7. What are the physiological effects of the salts of lead?
8 What are the physiological effects of mercury and its salts?
9. Write a prescription containing a salt of lithia, and give the pathological condition intended to be relieved.
10. What are the officinal preparations (and dose of each) of opium and its alkaloids?

SECTION I *A. Homœopathic Materia Medica and Therapeutics.* (A. M. Worthington, M.D., Examiner.)

1. Explain methods of preparing medicines by attenuation, solution and trituration, by the decimal system.
2. Give a brief botanical description of gelsemium sempervirens.
3. What are the laryngeal symptoms of hepar sulphuris?
4. Name the remedies of greatest value in acute articular rheumatism.
5. What are the lung symptoms of phosphorus?
6. Give the heart symptoms of convallaria majalis.
7. Name the indicated remedies for parenchymatous tonsillitis—primary and suppurative stages.
8. Describe the characteristic diarrhœa of croton tiglium.
9. Differentiate the skin symptoms of thuja occidentalis and graphites.
10. Give the abdominal symptoms of veratrum viride.

SECTION II. *Obstetrics and Gynecology.*
(Dr. Brown, Examiner.)

1. What is natural labor?
2. How many stages in a natural labor, and how are they divided?
3. Give the treatment of the third stage of a natural labor.
4. What are the functions of the placenta?
5. Give indications for and methods of inducing premature labor.
6. Give the treatment of abortion.
7. What are the differences between the male and female pelvis?
8. Give the symptoms and treatment of puerperal eclampsia.
9. Give the symptoms and treatment of uterine polypi.
10. Give the causes, symptoms, and treatment of rupture of the perineum.

SECTION IV. *Physiology.*
(D. R. Atwell, M.D., Examiner.)

1. What is a proximate principle? Give classification of the same.
2. What are the functions of the retina and iris?
3. What is the function of the placenta?
4. Give the normal surface-temperature of the body, and name influences which produce variation from the normal.
5. What forces keep the blood in circulation?
6. For what do the lacteals and mesenteric veins serve?
7. Give the percentage composition of human milk.
8. For what does the skin serve?
9. Give the physiological properties of the pneumogastric nerve. Over what organs does it preside?
10. Describe the excretory process of the kidneys.

SECTION V. *Anatomy.*
(A. Uebelacker, M.D., Examiner.)

1. Describe the humerus.
2. Describe the shoulder-joint.
3. Enumerate the muscles of the acromial, anterior and posterior scapular regions.
4. Describe the patella and muscles attached to it.
5. Give origin, course, and divisions of right carotid artery.
6. Describe the external jugular vein.
7. Describe the vertebral artery.
8. Describe the radial artery.
9. Describe the ophthalmic nerve.
10. Describe the tongue.

SECTION VI. *Surgery.*
(Hugh C. Hendry, M.D., Examiner.)

1. State the recognized fractures and dislocations of the head of the humerus, and give the differential diagnosis of each.
2. Give symptoms, diagnosis, and treatment of backward dislocation of the elbow.
3. State the recognized fractures of the head of the femur, and give the differential diagnosis.
4. Give the immediate symptoms and remote effects of a severe concussion of the spine in the lumbar region.
5. Treatment of wounds: Describe the antiseptic methods as at present employed. Give the names of several antiseptics and the manner of using them.

SECTION VII. *Chemistry.*
(Eugene Tiesler, M.D., Examiner.)

1. Give three tests for sugar in urine.
2. What is the difference between slacked and quick lime?

3. Give tests for arsenic in solution.

4. By what methods are volatile oils obtained, and how do they differ from fixed oils?

5. What is alcohol? How is it produced?

6. In what form is mercury present in the unguent. hydrarg. ciner.

7. Define bismuth subnitrate. How is it prepared? Give properties.

8. What is spirit mindereri? How do you prepare it?

9. What is oil of vitriol?

SECTION VIII. *Histology, Pathology, and Diseases of the Eye and Ear.* (H. G. Wagoner, M.D., Examiner.)

1. Describe muscular tissue.

2. Describe nerve tissue.

3. Give the lesions characteristic of typhoid fever.

4. Give the pathology of arsenical poisoning.

5. Give pathology of acute, chronic, and tubercular meningitis.

6. Give the pathology of lupus.

7. Describe hypertrophy of the heart, without and with dilatation.

8. Give symptoms and treatment of furuncle of the external auditory canal.

9. Give causes, symptoms, and treatment of purulent ophthalmia.

10. Explain exophthalmic goitre, symptoms and causes.

SECTION IX, *Hygiene and Medical Jurisprudence.* (A. H. Worthington, M.D., Examiner.)

1. Name the diseases that may be caused by drinking impure water.

2. What method would you advise to destroy the disease-producing germs that impure drinking-water may contain?

3. What is the normal quantity of carbon dioxide in the atmosphere, and what proportion in the air is sufficient to cause sudden asphyxia?

4. What is the difference between an antiseptic, a deodorant, and a disinfectant?

5. Names the acids, acetic, boric, carbolic, and salicylic, in the order of their strength as germicides.

6. What are the ordinary signs of death?

7. How soon after death is the best time to make a post-mortem examination for medico-legal inquiry?

8. How would you distinguish an ante-mortem bruise from a post-mortem ecchymosis?

9. State the chief distinctive marks to determine the sex and probable age of a human skeleton.

10. How would you diagnose alcoholic coma from apoplexy, or an injury to the brain?

Arsenic in Commercial Acids.—BUCHNER calls attention to the fact that commercial hydrochloric and sulphuric acids contain large quantities of arsenic. On examination in 200 pounds of sulphuric acid were found 4 ounces of arsenious acid and nearly four times as much arsenic was found in a sample of hydrochloric acid.—*American Journal of Pharmacy*, February, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM FEBRUARY 3 TO FEBRUARY 9, 1891.

By direction of the Secretary of War, JAMES G. MERRILL, *Captain and Assistant Surgeon*, is relieved from duty at Fort Reno, Oklahoma Territory, and will report in person, at the earliest practicable date, to the Surgeon-General of the Army, in this city, for duty in his office.—Par. 5, *S. O. 29, A. G. O., Washington. D. C.*, February 5, 1891.

DAVIS, WILLIAM B., *Captain and Assistant Surgeon.*—The leave of absence for seven days granted, by Orders No. 2, Fort Preble, Maine, February 4, 1891, is hereby extended twenty-three days, with permission to apply to the Adjutant-General of the Army for a further extension of one month.—Par. 2, *S. O. 22, Headquarters Division of the Atlantic, Governor's Island, New York*, February 5, 1891.

CHAPIN, ALONZO R., *Captain and Assistant Surgeon.*—Is granted leave of absence for one month, with permission to apply to the Adjutant-General of the Army for an extension of one month, Fort Yates, North Dakota.—Par. 3, *S. O. 17, Department of Dakota, St. Paul, Minnesoto*, January 31, 1891.

By direction of the Secretary of War, CALVIN DE WITT, *Major and Surgeon*, is relieved from duty at Fort Hancock, Texas, and will report in person to the commanding officer, Fort Sam Houston, Texas, for duty at that station.—Par. 1, *S. O. 27, A. G. O., Washington, D. C.*, February 3, 1891.

By direction of the Secretary of War, WILLIAM STEPHENSON, *Captain and Assistant Surgeon*, will proceed, without delay, from Columbus Barracks, Ohio, to Fort Wayne, Michigan, and report in person to the commanding officer of that post for temporary duty, and upon completion thereof will return to his proper station—Par. 13, *S. O. 23, A. G. O., Washington, D. C.*, January 28, 1891

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE FIVE WEEKS ENDING FEBRUARY 7, 1891.

BAILHACHE, P. H., *Surgeon.*—Granted leave of absence for seven days, January 12, 1891.

PURVIANCE, GEORGE, *Surgeon.*—To proceed to Pittsburg and Erie, Pa.; Cleveland and Toledo, Ohio; Detroit, Mich.; and Buffalo, N. Y., as inspector, December 29, 1890.

CARRINGTON, P. M., *Passed Assistant Surgeon.*—Granted leave of absence for seven days, January 16, 1891.

GEDDINGS, H. P., *Assistant Surgeon.*—To report in person to the Supervising Surgeon-General, January 16, 1891. Detailed for special duty, port of Georgetown, D. C., January 19, 1891.

STURGEON, W. G., *Assistant Surgeon.*—To proceed to New Orleans, La., for temporary duty, January 6, 1891.

SAWTELLE, H. W., *Surgeon.*—Detailed as a member of the Board, Revenue-Marine Service, January 26, 1891.

AUSTIN, H. W., *Surgeon.*—Detailed as Chairman of Board for Physical Examination of Officers of Revenue-Marine Service, January 28 and February 6, 1891.

PETTUS, W. A., *Passed Assistant Surgeon.*—Detailed as Medical Inspector of Immigrants, Port of Boston, Mass., January 29, 1891.

MAGRUDER, G. M, *Passed Assistant Surgeon.*—Detailed as Recorder of Board for Physical Examination of Officers of Revenue-Marine Service, January 28 and February 6, 1891.

KINYOUN, J. J., *Passed Assistant Surgeon.* — Detailed for special duty at Berlin, Germany, January 26, 1891.

GROENEVELT, J. F., *Assistant Surgeon.*—To proceed to Cape Charles Quarantine for temporary duty, February 7, 1891.

THE MEDICAL NEWS *will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.*

Local papers containing reports or news items should be marked.

Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course not necessarily for publication.

All communications relating to the editorial department of the NEWS *should be addressed to No. 1004 Walnut Street, Philadelphia.*

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ORIGINAL ARTICLES.

A CASE OF EPILEPSY WITH DOUBLE CONSCIOUSNESS.

BY G. R. TROWBRIDGE, M.D.,
ASSISTANT PHYSICIAN TO THE STATE HOSPITAL FOR THE INSANE, DANVILLE, PA.

"DOUBLE consciousness" being regarded by most writers as a strange phenomenon, especially when associated with epilepsy, the following case is deserving of a short report. I regret that the history of the case is somewhat meagre, but I will give the data as completely as possible.

The patient is a German, male, aged fifty-two years, admitted February 3, 1888—his second admission to the hospital. He is about 5 feet 8 inches in height, weighs about 150 pounds, and is thick-set, and very muscular. All of his toes have been lost, and his fingers more or less disabled by frost-bite. He has been subject to epileptic convulsions since 1862, and was first attacked while working on a transatlantic steamer, where he was a stoker. He thinks that the disease was caused by the intense heat to which he was exposed. There is no family history of epilepsy or of any other nervous affection, and no record of insanity. The epileptic attacks are of a most violent nature (*grand mal*), and occur about once every month or six weeks. He then has from three to six convulsions, and never during the time he has been in my charge has he had single convulsions in the intervals. For several days preceding the convulsions he complains of pain in the left inguinal region, and says that it is "due to a fall he had when on board ship." There is no evidence of anything abnormal in this region, and I regard the pain as an aura, as he never complains of it except just before the attack. Shortly after this aura (from twenty-four to thirty-six hours) he has a convulsion, and on recovering from this becomes somewhat irritable and sullen. Other convulsions follow until he has had from three to six. His irritability and sullenness increase in proportion to the number of convulsions, and he finally lapses into a perfect condition of double identity, the original *ego* being completely destroyed, and during this period of second self it is necessary to place him in seclusion.

The time occupied during the transition from the first condition to the second is from two to four days, varying according to the interval between the epileptic attacks.

During this period of "second self" he becomes very violent and abusive, and can be approached only after being physically overpowered. When he passes into this condition he at first refuses nourishment, but toward the latter part of the period he will swallow if a cup is held to his mouth, though it is necessary to restrain his hands and feet. If left to himself he is, as a rule, comparatively quiet, and, as far as I can ascertain, his sleep is not disturbed.

This condition lasts from five to ten days, and his return to a normal condition rarely occupies more than twenty-four hours, though on one or two occasions it has taken somewhat longer. For some time after the return to his normal condition he speaks in a husky voice, and complains that his throat is sore, and for some days he is abstracted and listless.

When in his normal condition, the man is of a pleasant disposition, and does a great deal of work about the ward. When questioned in regard to his sensations during the periods of "second self," he says he can tell nothing except that everybody and everything is strange to him, and that he knows nothing of what he says or does. But he can describe circumstances and occurrences which took place *before* the development of his "second condition"—*i. e.*, during a previous normal period.

The expression of his face during the period of "second self" is altered, changing from a rather pleasant expression to one of intense anger and hatred. In short, I do not think that Stevenson's "Dr. Jekyll and Mr. Hyde" could be worse than this man, were he given his liberty.

On one occasion, before his admission to this hospital, while in his second state, he was disturbed by his wife, who endeavored to make him eat, and in the paroxysm of rage caused by this he tried to kill her with a hatchet, but was prevented by the timely interference of the neighbors. He afterward said that he had no recollection at all of the matter.

It is difficult to understand the changes in the mind of an individual which produce such a phenomenon as double consciousness, and it is hard to explain how the absolute *ego* can be so completely destroyed for the time being. Undoubtedly the epilepsy is the cause of the transition in this particular case, but how it so overwhelms a man's being as to render his own identity *nil*, is to me unexplainable.

Epileptic convulsions occurring in rapid succession will, for a time, destroy the action of the intellectual centres, and for a short time after such an attack it is common for the person to be either violently excited or correspondingly depressed, but never before have I seen a case in which there was complete loss of identity. Spitzka[1] regards this

[1] Manual of Insanity.

condition as one of extreme rarity, and says, "it appears to be limited to the mental disturbances of menstruation and to periodical insanity." He also intimates that such a condition may occur in connection with primary confusional insanity, in regard to which he says:

"It is noteworthy that a large number of the patients are aware that a change has taken place, that they are no longer their former selves, and they may be able to give—by snatches, it is true—a tolerably fair account of the circumstances preceding the outbreak of the disease. But as the latter develops, the patients cease to recognize their position, or to complain of the 'head trouble,' whose existence they previously admitted, and, at most, they speak of their former selves in the third person, or manifest a confused variety of double consciousness."

In defining double consciousness the same author says:

"This condition is characterized by the alternation of periods, in which the subject enjoys his memory and retains his sense of identity, with others, in which he fails to recollect the impressions of his healthy period, but possesses the faculty of learning new ones. In the next healthy period he recollects what occurred before the abnormal period, but does not reproduce every fact acquired in the other. In fact, the mental life of two distinct individuals seems to alternate in one person."

Savage, in his work on insanity, maintains that double consciousness may be present with epilepsy, and also claims that the condition is closely allied to somnambulism.

A large number of cases of double consciousness presenting interesting facts have, from time to time, been reported, and in all the reports that I have seen the period of the second identity was longer than in my case.

The interesting facts in this case are:

First. The association of epilepsy and double consciousness; and

Second. The almost unvarying periodicity and uniformity of the convulsions and sequelæ.

I may say, in conclusion, that various forms of treatment have been tried to prevent these epileptic seizures, but without success.

A CASE OF GUNSHOT WOUND OF THE HEAD, WITH GREAT LOSS OF SUBSTANCE.[1]

BY J. D. GRIFFITH, M.D.,
PROFESSOR OF SURGERY IN THE KANSAS CITY MEDICAL COLLEGE.

[Reported by B. VAN SWERINGEN, M.D.]

THE patient was a boy sixteen years of age, a native of this country, who on June 8, 1888, while playing with his mates, was accidentally shot in the head. The weapon was an old style Colt's revolver 0.38 calibre, and was fired at a distance of not more than two feet. The bullet entered just above the middle of the right superciliary ridge and passed out through the upper right segment of the occipital bone, wounding in its course the anterior, middle, and posterior lobes of the cerebrum.

Dr. Crow called me to see the case, and when I arrived, two hours after the injury, the patient was lying on his right side, comatose, bleeding from the points of entrance and exit, particularly from the former, and also apparently from the right ear. He had complete hemiplegia on the left side, but no paralysis on the right. The pupil of the right eye was markedly dilated, and that of the left contracted; there also existed a very slight converging strabismus, which his parents assured me was present before the injury. The patient, of course, presented the symptoms of profound shock, and his death was momentarily expected. However, we shaved his head and joined the openings made by the ball, by an incision about seven and one-half inches in length. Upon separating the edges of wound, we found that the frontal, the parietal, the greater wing of the sphenoid, the squamous portion of the temporal, and a portion of the occipital bones had been shattered; the largest piece of bone that came away being about two and one-half by three inches. We carefully removed all the fragments, following as nearly as possible the rules of asepsis, if not antisepsis. After the numerous fragments of bone had been removed, we found the opening in the dura opposite the point of entrance, and also the wound of exit, which was the larger; these we enlarged, nearly joining them. The track of the ball was easily found, along which were discovered a number of spiculæ of bone which had been carried in by the ball. Upon washing these out, at least two ounces of cerebral substance escaped.

We then inserted a drainage-tube from the entrance to the exit, leaving a half inch of the tube projecting in front and behind, closed the wound with catgut, and applied an antiseptic dressing.

His symptoms grew no worse during the operation, and he even showed signs of returning consciousness by wincing from the pain when the sutures were introduced. On the next morning the boy was perfectly conscious and his memory seemed to be perfect. We tested his mental faculties by requiring him to add figures, etc., which he did with readiness in various ways. His memory for events before the accident is seemingly as good as ever, and there is no reason to believe that it has since failed, for he remembers everything from the time he regained consciousness after the operation. After the operation there was present, in addition to the hemiplegia, marked stuttering, which has steadily diminished. This was in all probability due to extensive loss of cerebral cortex.

Two weeks after the injury the boy had a chill, and upon close examination I found a small collection of pus below the wound of exit in the occipital bone. This I opened and drained. Six weeks after the injury a hernia cerebri made its appearance, and became fully as large as my fist. When this was firmly pressed upon, as by a bandage in order to reduce it, coma followed; I, therefore, allowed it to be gradually reduced by the pressure of the head against the pillow.

A small bed-sore was the only other complication,

[1] Read before the Kansas City Academy of Medicine.

but this gave very little trouble. Marked depression and a large cicatrix now mark the seat of the wound. From the point of entrance, about half an inch above the middle of the right superciliary ridge, to the point of exit, about half an inch below the parietal occipital suture, and from the saggital suture to the temporal ridge there is entire absence of bony structures. At its greatest depth the depression measures a little over an inch.

Sensation in the paralyzed side began to reappear six weeks after the injury, the skin becoming sensitive to pain down to the elbow and to the knee. There is still slight numbness below those points. Motion also developed with returning sensibility, and has been greatly benefited by electricity. In November he made his first attempt after the injury to walk, and he is now able to walk without assistance. The flexor muscles of both the upper and lower extremities are stronger than the extensor muscles. It is difficult for him to lift the toes of the left foot from the ground, and there is an inclination for this foot to catch on the other. When he tries to open his hand to grasp anything the flexors are thrown into a spasm, which causes his hand to close tighter.

His temperature for two weeks after the operation remained between 98½° and 100½°. Whenever it rose above 99° an ice-bag was applied to his head.

Regarding the converging strabismus, I am inclined to accept the statements of his parents, that it existed prior to the accident, for I do not see how it would be possible for the fibres of the motor-oculi supplying the internal rectus to have been injured and the remainder of the nerve escape, and if the entire nerve had been injured the other ocular muscles would have been affected. There may be some difference in the size of the pupils, and I think there is a difference in their response to light, but there is no hemianopsia and the eye-grounds seem to be normal.

The boy is now going to school, and is progressing in his studies without evidence of impaired mental faculties. It would be interesting to know whether it is only the left hemisphere that is doing the work. No medical treatment has been employed. He comes to the office so that we may keep the muscles developed and improve their condition, if possible, by the battery.

DISCUSSION.

In discussing this report DR. S. G. BURNETT said that he had seen but one similar case. In that case a man had a drill blown with great force into his head. It entered just anterior to the ear, passing upward and removing a considerable portion of the motor tract. The patient had complete hemiplegia for a time, but recovered with fairly good use of his left side. A peculiar thing in this case was paralysis of the soft palate, which occasionally seemed to drop down and almost strangle the man.

One important and singular point about Dr. Griffith's case is that he had no convulsions. This the speaker could explain only by supposing that the whole of the motor centres was destroyed, so that no irritation could be received by the cortical substance. The boy has the characteristic hemiplegic gait, and that peculiar grasping of objects followed by inability to relax the grasp, which is also very characteristic. This condition is to be expected, because normally the flexors are more powerful than the extensors.

The stuttering is probably due to incoördination. All authorities claim that the speech-centre is on the left side of the brain, and undoubtedly, if the injury had been on the left side, there would have been complete aphasia. His intelligence is very good, better than we would expect, but just what amount of brain tissue has been removed cannot be estimated. The speaker did not think it possible to have paralysis of the internal rectus without a similar loss of power in all the muscles supplied by that nerve. There could not be complete motor destruction without implication of the third nerve.

DR. B. E. FRYER said that the appearance of the wound seemed to indicate that it was made by a round, instead of a conical bullet; still conical bullets sometimes play terrible havoc, as in this case. The case was very interesting, both surgically and neurologically. Surgically, it is a demonstration of what boldness, with care and activity, will do in these cases, plus the antiseptic methods.

An important point, which is not sufficiently referred to, is that in such injuries spiculæ of bone are carried into the brain.

Dr. Fryer had seen the case of a man who died very suddenly while apparently in good health, His duties had required severe work, and he was fairly intelligent. The disease of which he died seemed to be a sudden attack of pneumonia. The speaker's assistant, an accurate observer, made the post-mortem, and found the whole of the right frontal lobe a pultaceous mass, a condition that must have existed for months. This corroborated what Dr. Burnett said in regard to the speech-centre being on the left side; it shows that intellectuality and mentality may not be dependent upon the bilateral working of the brain, for this man had shown no signs of mental failure in the months during which he had been under observation.

DR. JOHN PUNTON said that the case opened for consideration the subject of cerebral localization.

Thomas Hood, of London, in 1822, reported cases and stated that disturbances of speech always accompany lesions of the frontal lobe; this was proven by Broca in 1861, when he definitely localized the speech-centre as being in the lower portion of the third frontal convolution on the left side. Dr. Griffith's case seems to confirm that report.

In 1872, Ferrier made experiments which demonstrated that the anterior portion of the brain is concerned only in motor acts, while the posterior is devoted to receiving sensory impressions, and the case reported seems to support these views also. In the first place there is left hemiplegia; that would, of course, support the theory that the fibres of the motor tract cross to the opposite side. Now the motor zone is situated at, and includes both sides of the fissure of Rolando, for a distance of about an inch, including a portion of the frontal, parietal, and paracentral lobes; that is, the ascending frontal, the ascending parietal and the anterior portion of the superior parietal convolutions. It would seem that all of these parts were more or less injured in this case.

There are at least three different schools of experimental physiologists in cerebral localization. One school is represented by such men as Monk and Ferrier, who believe the brain can be mapped out into definite areas whose limits and function can be clearly defined. Another school, represented by Exner and Luciani, oppose the sharply-defined boundaries of definite areas and claim that they overlap to a greater or less extent. The third school, represented by Brown-Séquard and Golz, of Strasbourg, still support the original view of Flourens that the brain can act only as a whole. Now it is very difficult at times for the student to know which school to follow.

This case seems to overthrow theories that were thought to be conclusively proven.

The cause of the spastic contraction is probably due to irritation caused by the cicatrix at the angle of junction of the superior parietal and ascending parietal convolutions, and if an operation for its relief should be deemed expedient, that should be the objective point, but *any* operation would hardly be warranted.

DR. B. H. ZWART referred to the following case of his own:

In one of the battles of the civil war a man named Stewart lost the upper part of his head, and a considerable amount of brain-substance. For a year following he was confined to his bed, owing to complete paraplegia. This, however, gradually grew better, and he became addicted to the use of liquor, and after an excessive indulgence he became very nervous, and finally, in 1876, convulsions supervened. He died of phthisis some years later. The fact that the convulsions came on so late may throw some light on the future history of Dr. Griffith's case.

DR. B. E. FRYER thought that an injury of this kind does not militate against any of the established views in regard to cerebral localization. It must be remembered that we have not a clean cut through the brain. A conical ball distorts the skull, and lacerates the brain. Moreover, there is a scattering of the bone along the track of the ball. We cannot, therefore, lay down rules except by symptoms, and he thought that the symptoms in this case were definite, and conformed, in the main, to the theories in regard to localization. Again, we have more or less hæmorrhage into the brain after such injuries, which further obscures the diagnosis. It is very difficult, therefore, to know to just what extent the brain has been damaged after such an injury as this.

DR. KYGER said that two things in this case struck him very forcibly: one was the boldness of the surgeon in operating while expecting the momentary death of the patient; the other was the value of antisepsis.

DR. FEE said that the question of drainage and of the kind of drainage, whether strands of catgut, or rubber, or glass tubing, etc., was a matter of personal experience. Drainage has been abused. Too large drainage-tubes are left in place too long, and act as foreign bodies.

DR. BURNETT said, in regard to the application of electricity, that the proper way to apply it would be to place one electrode over the back of the neck, moving the other over the body, and using a current strong enough to cause contractions.

DR. PUNTON asked Dr. Burnett if he thought the case would terminate in Jacksonian epilepsy.

DR. BURNETT thought that it would not, because there is so little gray matter left; but as there is some dizziness, and contractions when the boy becomes excited, epilepsy may develop.

DR. GRIFFITH, in closing, said that he had almost decided, that in case marked epileptic seizures developed, to operate on the cicatrix. Whether anything could be accomplished by celluloid implantation, or whether it would be successful, could not be determined. If something of that nature could be done it would be of advantage, by lifting the scalp away from the encephalon. The paroxysms of dizziness under excitement are disappearing.

In reference to drainage-tubes, in this case a tube as large as the little finger was used, and kept in for thirty-two days, but it was kept clean, and was not removed until no débris came from it. For the first two weeks a great deal of broken-down material came away. He thought, however, that the tube was kept in too long, and was probably instrumental in causing the hernia cerebri which developed at the point of exit of the drainage-tube after its removal.

THE SURGICAL TREATMENT OF EMPYÆMA.[1]

BY JAMES A. GOGGANS, M.D.,
OF ALEXANDER CITY, ALA.;
SENIOR COUNCILLOR OF THE MEDICAL ASSOCIATION OF THE STATE OF ALABAMA.

DURING the last eighteen months I have treated six cases of empyæma following pneumonia, all of which have made perfect recoveries. The patients varied in age from three to thirty-five years. I reported the clinical histories of three of the cases in a paper read before the Southern Surgical and Gynecological Association in 1889, and I trust that, in presenting them again in connection with others, they will not fail to be interesting. Besides, every case of empyæma presents its own clinical phenomena, consequently no single line of treatment can be invariably adhered to. It is a disease that any practitioner of medicine is likely to encounter, and with which we must deal promptly; therefore much more valuable information may yet be acquired by carefully studying the clinical history of each case.

The plan of treatment known as the surgical treatment is the one which has always been most successfully employed. Spontaneous cures are so rare that surgical interference is the rule. Powell has well said, and nearly all writers concur with him, that

"the spontaneous disappearance of such effusions is too uncommon to be expected, and the process of reabsorption is one too full of peril to be anticipated with anything but dread. It is indeed an attempt at such absorption that occasions the most characteristic hectic symptoms. Consequently the prognosis is practically hopeless without surgical interference. We must adopt some surgical measures or take upon ourselves the responsibility for a large mortality."

[1] Read before the Southern Surgical and Gynecological Association, November 13, 1890.

There are many modes of operating for the removal of pus from the pleural cavity, but they may be classified as follows under two general headings:

First. The closed method, which consists in removing the pus by simple puncture with a trocar or an aspirator-needle, and allowing the puncture to heal at once. This method was taught in the school of Hippocrates and described in the writings of Galen, but, until quite recently, was practised only as a last resort.

Second. The open method, which consists in making a more or less free incision and the introduction of a drainage-tube to maintain the perfect evacuation of the fluid, to permit irrigation, and to promote free ingress and egress of air that has passed through an antiseptic dressing. The surgical treatment then being an absolute necessity, we cannot over-estimate the importance of making the diagnosis certain by resorting to exploratory puncture with a hypodermic syringe. We can assure the patient that no harm can result from the procedure, and that the prognosis depends upon this means of settling the diagnosis.

In performing thoracentesis, some form of modern aspirator should be used. The patient should be prepared for the operation by administering an alcoholic stimulant, and, if an adult, a dose of morphine hypodermically; if a child, the camphorated tincture of opium by the mouth. By these measures the shock, caused by the introduction of the needle, is diminished, as are the cough, pain, and dyspnœa, which are so liable to follow the sudden withdrawal of the fluid and the subsequent expansion of the lung. The needle should be thoroughly cleansed and disinfected, and the point on the chest-walls at which the puncture is to be made should be thoroughly scrubbed with soap and water and bathed with an antiseptic solution. An anæsthetic cannot be considered as absolutely necessary.

J. Lewis Smith and a few other writers do not think that it is necessary to remove all the pus, but I think that we should remove as much as is possible, lest fistulous openings be formed through the walls of the chest, or through the lungs. Still it should not all be removed, if pain and dyspnœa be complained of, for the operation can be completed on the next day or within a few days.

I have performed thoracentesis one hundred and sixty-eight times, and have had no trouble from it, except slight pain and temporary dyspnœa.

As to the number of aspirations that should be made before resorting to the open method, there are many different opinions. I think, however, that the decision should depend almost entirely upon the character of the fluid and the physical condition of the patient. To illustrate this, I will refer to my own cases. The first case, aged seven years, was cured after eleven aspirations. The second, aged seventeen years, after one aspiration. The third, a man thirty-five years of age, after two aspirations. The remaining three were not cured by aspiration; one of them, aged twenty years, was aspirated seventy-three times; another, aged three years, was aspirated ten times; and the last one, aged eight years, was aspirated seventeen times before thoracotomy was performed. It is stated by almost all writers that when the fluid becomes fœtid incisions should be made, and I believe that the character of the fluid should govern us, to a great extent, as to when we should abandon thoracentesis and resort to thoracotomy. Still, in one of my cases, the pus was fœtid at the forty-fifth aspiration, and the fœtor had disappeared at the forty-ninth. The physical condition of this patient, while the pus was fœtid, was in no way worse than it was just before or afterward, and, as has been stated, aspiration was done seventy-three times before thoracotomy was performed. This record, in connection with the opinion of other operators, is certainly sufficient to establish the fact that thoracentesis should always be given a fair trial in any case of purulent pleurisy, before the open method is resorted to.

During thoracentesis the sitting posture must be assumed by the patient, unless there is great feebleness, when the recumbent posture may be allowed. I removed thirty-two ounces of pus from one of my patients while he was in the recumbent posture, the needle being introduced between the fourth and fifth ribs in front. The pus seemed to flow as rapidly as though the patient were in the erect position.

I wish to call special attention to the condition of patients just after the operation of thoracentesis. The histories of my cases illustrate this condition very forcibly, nevertheless I mention it here. Take, for example, a patient aged from three to eight years, with the physical signs of empyæma, a temperature of 103° F., pulse from 120 to 160, and the respirations from 30 to 60 per minute. Remove the pus by aspiration, and the following morning the temperature will be very near the normal standard, or perhaps a little subnormal, and, if recovery is to take place from this operation, the pulse and respirations will also be very nearly normal, with but slight elevation on the following evening. If, however, there is to be a re-accumulation of the pus, and hence a necessity for repeating the aspiration, the temperature will be nearly normal or perhaps subnormal, but the pulse will remain at from 100 to 130, and the respirations from 40 to 60 per minute. From observations made during the progress of my cases, I have found that the rapid respiratory movement is the last symptom to disappear, and that there is no certainty in the success

of the operation until the pulse and respirations fall with the temperature.

The three cases cured by aspiration had a pleuro-bronchial fistula, and two of them expectorated large quantities of pus. The third never expectorated pus, but there was always considerable escape of air into the aspirator after the pus had ceased to flow, proving that a pleuro-bronchial fistula existed. In one of these cases, aged thirty-five years, the right arm was elevated during the operation, thereby elevating the scapula from its normal position, and the needle was introduced between the sixth and seventh ribs under the scapula, consequently, when the arm was lowered the scapula descended and covered the puncture made by the needle through the subscapular tissues.

The physical condition of the patient should be our principal guide in resorting to the operation of thoracotomy. In other words, thoracentesis should be adhered to, unless we see great emaciation and hectic symptoms. Another condition under which I would urge the operation of thoracotomy, is where perforations through the lung are threatened, since the most serious complication of empyæma is a pleuro-bronchial fistula.

In order to perform the operation of thoracotomy a general anæsthetic must be used. I am partial to ether carried to complete anæsthesia. The operation can then be performed carefully, the drainage-tubes adjusted with precision, and the antiseptic dressing applied without inflicting pain. The point selected for making the incision should be thoroughly cleansed, the tissues divided down to the pleura with a bistoury and a grooved director thrust into the pleural cavity, when the pus will begin to escape along the groove. The incision should then be made large enough in the adult to admit the index-finger, and in children lengthened to the extent of at least one inch to permit free escape, not only of the fluid, but of any fibrous masses or organic débris that may be present, which are apt to undergo decomposition and thereby produce septicæmia and death.

It is stated by almost all authors that there is no danger of the pus escaping too rapidly, since air will enter in its place and equalize the pressure. I have not found this to be true. In two of my cases I was forced to close the incision and stop the flow of pus by introducing my finger, and subsequently a tent, to relieve the cough and dyspnœa brought on by the sudden withdrawal of the fluid. This being the case, I think that it would be extremely hazardous suddenly to evacuate the fluid by incision, and immediately irrigate the pleural cavity, even if the pus were fœtid. The success of the operation depends upon the free ingress and egress of air that has passed through an antiseptic dressing, and it should be plainly heard passing through the tubes at each act of forced expiration.

The object of using irrigation is said to be to rid more completely the pleural cavity of the elements of decomposition, and thereby favor obliteration of the abscess cavity, by allowing the pleural surfaces to grow together by granulation. Therefore, if irrigations are employed, it is very important to use no force in carrying the fluid into the pleural cavity, since delicate and important granulations and adhesions may be broken up.

As soon after the operation as the condition of the patient will permit, two pieces of one-fourth inch drainage-tube should be introduced in such a manner as merely to project into the pleural cavity, and cut off about one-fourth of an inch from the external surface of the chest; then the antiseptic gauze dressing should be applied.

If the ribs are so close together that drainage cannot be maintained through a simple incision and rubber tubes, or if, from inexpansiveness of the lung or any other cause, the pleural cavity fails to become obliterated, the old operation of resection of ribs affords the best chances for thorough evacuation of the fluid and subsequent drainage.

At a recent meeting of the German Congress of Internal Medicine, the surgical treatment of empyæma was pretty thoroughly discussed, and to show the general plan adopted by those who took part in the discussion, I will give a synopsis of what was said:

"In the first place, it was agreed by all that some kind of surgical interference was indicated, except in very rare instances.

"Professor Immermann opened the discussion and stated, first of all, that the pus must be evacuated by operation; and next, that simple aspiration will not answer except in small empyæmata, which of themselves would become absorbed. The plan recommended by Bulau was spoken of most favorably. Immermann collected 49 complete cures out of 57 cases. It was not suitable, however, for cases of inexpansive lung, pyopneumo-thorax, or pulmonary fistulæ.

"Dr. Schede, of Hamburg, took the surgeon's view of the matter, and advised the radical operation, *i. e.*, resection of rib. Bulau's operation he thought much less safe than resection.

"Dr. Curschmann, of Leipsic, has treated all cases in the past ten years by Bulau's method. Among 73 cases 89 per cent. were cured and 6 died.

"Professor Leyden spoke favorably of Bulau's method.

"Dr. Ewald, in 1874, had collected statistics in Frerich's clinic of 109 serous and 46 purulent cases, and had then concluded that of 1000 cases 928 do not get well with simple puncture, while 528 are cured by radical operation. The results of surgery to-day are much better than that. In the present year he had, with Koster, operated with the double incision in 9 cases, with 1 death from rapid tuberculosis. The operation was done as soon as the nature of the case was proved. The objections arising from the old cases would be obviated if early interference were the rule.

"Professor von Ziemssen, of Munich, had for ten years past treated all empyæmata by incision and rib resection, and was perfectly satisfied with this method.

"Dr. Mosler, of Greifswald, advised, after the operation, washings with boric acid, and then injections of iodoform and glycerin.

"Dr. Runeberg, of Helsingfors, treated all empyæmata by rib resection, and did not wash out. He had thus dealt with 63 cases, of which two were still under treatment. Two were manifestly tuberculous, 10 were due to pulmonary gangrene, 49 were simple empyæmata. Of these latter, 46 were completely healed, in 2 fistulæ remained, 1 case died from erysipelas. The average duration of treatment was forty-eight days.

"It will be noticed that the opinions of all who took part in the discussion were divided between Bulau's method and rib resection. Simple incision with the introduction of drainage-tubes was not advocated by any of them. Nearly all thought that injections were useless."[1]

Now, the plan of making free incisions and introducing drainage-tubes is frequently successful in this country, and I do not believe that rib resection should ever be resorted to, except in cases in which perfect drainage with free ingress and egress of air fails to be accomplished by simple incision, and in cases in which the cavity fails to become obliterated, from an inexpansive lung or from any other cause. In such cases the removal of a considerable portion of rib weakens the thoracic walls, and thereby favors retraction of the chest and obliteration of the pus-cavity.

In all of my cases it was evident that the pleural cavity was almost obliterated within the first two or three days after thoracotomy was performed, and, instead of producing dyspnœa and cyanosis, these symptoms rapidly disappeared after the operation.

I am satisfied that irrigations cannot be used with safety, since there have been many instances of sudden death directly attributable to them. Loomis states that he has thrice had good reason to attribute sudden death to the direct effect of washings. Sir Joseph Lister also advises against irrigation. Consequently I do not believe that it should be practised unless there are symptoms especially demanding it. It is admissible when the discharge is very chronic, and continues in spite of free drainage, and when there are symptoms which threaten septicæmia. I used irrigations of warm water in all of my cases, and am convinced that they are irritating and injurious during the first two or three weeks following the operation.

In one of my cases, aged twenty-one years, the tube accidentally dropped out too early, and there was a re-accumulation of the pus and enlargement of the abscess cavity. Weak solutions of iodine (four or five grammes each of iodine and iodide of potassium to the pint of warm water that had been boiled) proved to be very beneficial. The discharge was checked at once, and the pus-cavity quickly obliterated.

[1] Medical Record.

To illustrate the subject further, I will report the following cases:

CASE I.—Carl R., male, aged seven years. Had influenza, complicated by pneumonia, in March, 1889. On April 27th, pulse 98, temperature 99½°, decided dulness over the right side of the chest. Removed by aspiration 4 ounces of pus.

May 2. Pulse 102, temperature 102½°; removed 8 ounces of pus from between seventh and eighth ribs in the axillary line.

5th. 9 A. M., pulse 110, temperature 99⅕°; has considerable cough with some expectoration; removed 4 ounces of pus.

8th. Pulse 115, temperature 100⅘°; removed 6 ounces of pus.

9th. Pulse 76, temperature 98°, respirations 36; slept well last night, calls for food.

10th. Pulse 100, temperature 99⅗°; removed 3 ounces of pus.

11th. Pulse 96, temperature 98⅖°, respirations 36; takes plenty of nourishment.

12th. Pulse 100, temperature 99½°; has taken too much food and is passing blood from the bowels.

15th. Pulse 110, temperature 99⅖°, respirations 40; removed 1 ounce of pus.

17th. Pulse 115, temperature 102⅕°, respirations 40; removed 3½ ounces of pus.

18th. Pulse 100, temperature 99°; much more comfortable.

19th. Pulse 118, temperature 102⅗°; removed 3 ounces of very thick pus.

21st. Pulse 90, temperature 98½°, respirations 30; removed 1 ounce of pus.

23d. Pulse 120, temperature 100⅕°; removed 1 ounce of thick pus.

28th. Pulse 100, temperature 98⅗°, respirations 24.

30th. Pulse 84, temperature 98, respirations 22. From this time he made a rapid and complete recovery. There were in all eleven operations performed, and at each operation air escaped freely into the aspirator through a pleuro-bronchial fistula after the pus had ceased to flow.

CASE II.—E. R., male, aged seventeen years. Had influenza and pneumonia, followed by abscess of the lung, which discharged large quantities of pus by expectoration, from April 10 to May 28, 1889. On May 29th cough had entirely ceased, pulse 110, temperature 100°; circumscribed dulness over the abscess cavity about the middle of the left side of chest. Removed by aspiration about six ounces of very offensive pus—all that would flow through the instrument. There was no cough or distress of any kind when the operation was completed, but cough began in an hour afterward, and he expectorated eight or ten ounces of very offensive pus within the next twelve hours.

May 30. 8 A. M., pulse 88, temperature 98½°; expectoration has entirely ceased and the patient is very comfortable.

30th. 7 P. M., pulse 84, temperature 97⅕°; still no expectoration. Great retraction of the chest-walls in the locality of the abscess.

June 8. Pulse 80, temperature 98½°.

He made a complete recovery.

CASE III.—W. R., male, aged twenty years. Had influenza, and on March 16, 1889, had a chill followed by pneumonia of the right lung. There was no decided crisis, and on April 12th I removed 13 ounces of pus from between the seventh and eighth ribs in the axillary line. At this time his pulse was 92, temperature 101°, respirations 30. The cough had ceased. When the thirteen ounces of pus were removed he had some pain and dyspnœa, and the operation was ended.

April 14. Pulse 90, temperature 99⅕°. Has slept well since the operation.

15th. Pulse 96, temperature 99⅕°. Is obliged to take morphine to procure sleep. I removed 6 ounces of pus, when the operation had to be terminated.

16th. Pulse 84, temperature 99⅘°. Has slept well since the operation.

18th. Pulse 92, temperature 100°, respirations 50; symptoms of re-accumulation. Removed 32 ounces of pus; the puncture was made in front, between the fourth and fifth ribs, the patient lying on the back.

19th. Pulse 80, temperature 98½°, respirations 22. Is very comfortable.

July 15. Forty-five aspirations have been performed, and 351 ounces of pus have been removed.

16th. I removed 8 ounces of very offensive pus. Thoracotomy advised, but the patient would not consent to the operation.

When the forty-ninth operation was performed the fœtor had entirely disappeared. Aspiration was repeated until the seventy-third operation, when 500 ounces of pus had been removed.

September 14. Pulse 112, temperature 98⅘°. The operation of thoracotomy was performed, ice being used as a local anæsthetic. The incision was made in front because the pus was pointing there. Five or six ounces of pus escaped, a soft rubber drainage-tube was introduced, and the dressing applied, which consisted of several layers of antiseptic gauze. About 2 ounces of pus were discharged daily until October 1st. At this time his pulse was 110, temperature 100°, and I commenced to irrigate the abscess cavity.

November 1. Pus cavity has been irrigated since October 1st, and now holds only a drachm or two of fluid.

8th. The tube is still in place and the patient is able to walk a mile or two. From this time he made a complete recovery.

CASE IV.—John G., male, aged thirty-five years. Developed pneumonia on April 10, 1890. I saw him in consultation with Dr. G. C. Radford on May 22d. He then had been expectorating large quantities of pus. His temperature on May 20th and 21st, was 102°; when I saw him his temperature was 98½°, pulse 84, and respirations 24. There was circumscribed dulness about the lower angle of the scapula; I elevated the scapula and removed 5 ounces of pus from between sixth and seventh ribs.

May 23. Temperature 100°, pulse 72, respirations 22.

24th. Temperature 99°, pulse 72, respirations 22; removed 12 ounces of pus from under lower angle of the scapula. No distress of any kind followed the operation.

June 1. Temperature 98½°, pulse 85. On June 4th and 5th, he expectorated a considerable quantity of pus.

8th. Temperature 98½, pulse 72, respirations 20. From this time he made a complete recovery.

CASE V.—Katie W., female, aged three years, was taken with pneumonia on February 13, 1890. I saw her in consultation with Dr. Onslow Regan on March 29th, temperature 102°, pulse 140, respirations 40. I removed 7 ounces of pus by aspiration.

March 30. Temperature 97½°, pulse 112, respirations 40.

31st. Temperature 101½°, pulse 130, respirations 48. Removed 5 ounces.

April 1. Temperature 98½°, pulse 104, respirations 36; patient comfortable and playful.

3d. Temperature 103°, pulse 150, respirations 50. Removed 6 ounces of thin pus.

5th. Temperature 97°, pulse 110, respirations 40; patient very comfortable.

6th. Temperature 101°, pulse 150, respirations 50. Removed 6 ounces of pus from between the fifth and sixth ribs, in the axillary line.

7th. Temperature 98½°, pulse 120, respirations 36.

11th. Temperature 101½°, pulse 140, respirations 48; considerable cough and expectoration, but patient swallows the pus.

13th. Temperature 102°, pulse 140, respirations 48.

15th. Temperature 98½°, pulse 120, respirations 40; expectorating and swallowing large quantities of pus. Pus-cavity completely emptied by the pleuro-bronchial fistula.

19th. Temperature 101°, pulse 140, respirations 48; expectoration has ceased, and there are evidences of re-accumulation of pus in the pleural cavity; I removed by aspiration 18 ounces of pus.

20th, 9 A. M. Temperature 99°, pulse 130, respirations 30. 6 P. M. Temperature 100°, pulse 130, respirations 50; considerable cough, but no expectoration. Eleven operations have been performed, and air escaped freely into the aspirator through a pleuro-bronchial fistula, after the pus had ceased to flow, at each operation.

Performed thoracotomy under ether carried to complete anæsthesia. Incision made in the axillary line between the sixth and seventh ribs. About one pint of pus escaped, air was freely admitted in its place, but cough and dyspnœa supervened, and a tent was introduced to prevent complete evacuation of the fluid.

21st. Temperature 98½°, pulse 120, respirations 30; removed the tent, and one pint of pus escaped. A single one-quarter-inch soft-rubber drainage-tube was introduced, a dressing applied, and air freely admitted.

24th. Temperature 98°, pulse 120, respirations 24.

26th. Temperature 98°, pulse 120, respirations 24; has dysentery, caused by having swallowed the pus.

May 1. Temperature 98½°, pulse 120, respira-

tions 24; about 1 ounce of pus is being discharged per day through the tube.

6th. Temperature 98½°, pulse 120, respirations 24; only 2 or 3 drachms of pus escaping per day.

10th. Temperature 98½°, pulse 120, respirations 24; very comfortable; was carried on the streets in her carriage.

31st. Temperature 98½°, pulse 120, respirations 24; pus-cavity has been irrigated since May 17th; now discharging 1 ounce of pus per day; washings discontinued.

June 8. Temperature 98½°, pulse 120, respiration 24; has been able to stand on her feet for several days; still wearing the tube.

17th. Tube removed, and patient discharged cured.

CASE VI.—Maxwell G., male, aged eight years, was taken sick with pneumonia, March 23, 1890. There was no decided crisis, and on the fourteenth day after the chill his temperature was 100°, pulse 130, respirations 48.

April 6. Temperature 101°, pulse 120, respirations 40.

7th. Temperature 100½°, pulse 125, respirations 50. Removed 6 ounces of pus by aspiration from the right pleural cavity; the needle was introduced between the fifth and sixth ribs in the axillary line.

9th. Temperature 100°, pulse 130, respirations 48. Removed 3 ounces of pus.

10th. Temperature 99°, pulse 125, respirations 40.

12th. Temperature 101°, pulse 130, respirations 48. Removed 4 ounces of pus.

13th. Temperature 99°, pulse 120, respirations 36.

14th. Temperature 102½°, pulse 130, respirations 48. Removed 2 ounces of pus.

15th. Temperature 98⅘°, pulse 116, respirations 36.

17th. Temperature 101⅘°, pulse 120, respirations 48. Removed 4 ounces of pus.

18th. Temperature 98½°, pulse 100, respirations 40.

20th. Temperature 100½°, pulse 120, respirations 48. Removed 4 ounces of pus.

26th. Temperature 102°, pulse 130, respirations 50. Removed 2 ounces of pus.

27th. Temperature 99½°, pulse 130, respirations 40.

28th. Temperature 100°, pulse 120, respirations 40. Removed 2 ounces of very thick pus.

May 1. Temperature 98, pulse 112, respirations 32.

6th. Temperature 100°, pulse 120, respirations 48.

9th. Temperature 98½°, pulse 110, respirations 40.

14th. Temperature 99°, pulse 120, respirations 40. Removed 2 ounces of pus.

15th. Temperature 98°, pulse 100, respirations 36.

21st. Temperature 98½°, pulse 132, respirations 50. Removed by aspiration 8 ounces of pus.

22d. Temperature 102½°, pulse 152, respirations 50.

23d, 9 A. M. Temperature 98½°, pulse 120, respirations 40. Performed thoracotomy under complete anæsthesia from ether. A large quantity of pus escaped, together with solid fibrous masses and débris. A severe cough and dyspnœa set in before the pus-cavity was emptied, and the incision was closed by introducing a tent. At 8 P. M., temperature 98½°, pulse 120, respirations 40.

24th. Temperature 98½°, pulse 100, respirations 35. Removed the tent from the incision, when several ounces of thin fluid escaped. Two pieces of one-fourth inch soft-rubber drainage-tube were introduced into the incision side by side.

25th. Temperature 98½°, pulse 90, respirations 32; air passes freely into and out of the pus-cavity through the tubes, and several ounces of serous fluid have escaped.

28th, 9 A. M. Temperature 98½°, pulse 110, respirations 36; 6 P. M., temperature 100°, pulse 130, respirations 48.

June 6. Temperature 98½°, pulse 90, respirations 30; able to sit up in bed.

15th. Up and walking about the room. I removed the tubes. From this time he made a rapid recovery.

In such cases as those reported some time ago by Dr. G. Frank Lydston, in the *Western Medical Reporter,* aspiration would hardly be indicated.

These cases are of a very interesting and exceptional character, and I will briefly report them in Dr. Lydston's own words:

"These cases I observed some years ago at the New York Emigration Hospital, and, for want of a better term, I have called it acute empyæma or acute suppurative pleurisy. The patient, a stout, powerfully-built Scandinavian, was sent to Ward's Island from Castle Garden immediately after landing, and without examination or diagnosis. As my interpreter was absent, I postponed a thorough examination of the patient until the following morning, making the provisional diagnosis of pleurisy with effusion. The temperature was 104° in the axilla. I was called away from the hospital the following morning, and upon my return in the afternoon I found the patient in a dying condition. He lived only an hour after I saw him. On post-mortem examination I was astonished to find the right side of the chest distended with pus of an exceedingly fœtid character; the lung was compressed against the mediastinum. When stripped off it formed a layer not exceeding an inch in thickness. So firmly was it compressed that I was at first at a loss to know what had become of the lung. The purulent fluid nearly filled an ordinary ten-quart milk-pail. All the other organs were in a healthy condition. The patient had only been sick about two weeks, as he was taken ill after getting aboard the steamer bound for America. This case was evidently of an infectious character, and probably the result of secondary infection, but I have no idea as to what might have been the primary difficulty.

"In this case a preliminary tapping would have been good practice, but sooner or later a free incision, with drainage, would have been necessary.

"The second case was that of an elderly woman, who developed empyæma secondary to pleurisy with effusion. The origin of the difficulty was unquestionably tubercular. The effusion subsided readily, but after a few weeks a rise of temperature, chills, and increase of pain heralded the formation of pus. It was about three weeks before I was able to detect the location of the purulent inflammation. I finally, however, mapped out an area of dulness, about the size of a silver dollar, at the level of the

ninth and tenth ribs, about four inches from the spinal column. Aspiration proved the existence of pus. A modified Estlander's operation was performed, with the excision of about two inches of the tenth rib. On passing the finger into the track of the pus it was found to lead to a considerable sacculus between the inner surface of the lung and the mediastinum. Free drainage was instituted, and the cavity closed in about eight weeks. Several months later a swelling appeared upon the thorax at the junction of the third and fourth costal cartilages with the sternum. This finally opened and discharged a considerable quantity of pus. Operation was refused. The patient finally died, apparently from the prolonged suppuration rather than from the tubercular process in the lungs, which, contrary to expectation, progressed very slowly.

"The third case of interest was very similar in some respects to the preceding. The patient, a man of middle age, previously healthy and strong, had been suffering from acute pleurisy for four or five days. On examination I found that tapping was not yet necessary, but suggested that it might be advisable later on. Three weeks later I again saw the patient, but the effusion, which, Dr. Walker informed me, had apparently been considerable, had almost entirely been absorbed. About a week later an irritating cough came on, and the temperature, which had become normal, again rose quite suddenly, but subsided in less than a week. The patient now began to expectorate a fœtid, purulent sputum; diarrhœa also set in. The severe cough and inability to sleep in the recumbent posture proved very annoying.

"On examination I found an area of dulness on percussion in about the same location as in the preceding case, and, bearing this case in mind, I diagnosed sacculated empyæma between the lung and the mediastinum. The same operation was performed as in the preceding case. A large quantity of pus, of a very offensive character, escaped; the odor was that characteristic of rotten eggs. The expectoration of the antiseptic fluid used for irrigation showed that the sacculus communicated with the bronchi. The case has done well since the operation, and is in a fair way to recover. The cough and diarrhœa have improved, and an excellent appetite has developed. As there is no appearance or history of tuberculosis in the case, the prognosis is apparently favorable."

REMARKS ON THE SURGICAL TREATMENT OF FIBROID TUMORS OF THE UTERUS.[1]

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FIBROID tumors of the uterus are benign even after cystic degeneration has occurred in them. The direct mortality from these tumors is, in my belief, greater than it was thought to be by the authors who wrote concerning them ten years ago. Many hitherto published statements emanating from operators became axioms, and, to some degree, impediments to surgical progress in the management of these tumors.

For instance, we were taught that unless the tumor threatened the life of the patient, we should not interfere with it. We were also taught that if the patient could be carried along until the menopause was established, that the tumor would gradually atrophy, and finally disappear. Further, we were taught that subserous fibroids did not require surgical operation. Finally, supra-vaginal hysterectomy was denounced as an unwarrantable procedure on any patient, unless without it her death was practically an assured fact. These teachings are rapidly becoming ancient history despite the desperate efforts and exaggerated statements of the advocates of electricity as a curative agent. In regard to the latter, men who did not own a battery, and who had never seen a fibroid tumor removed by an electrical current, have written elaborate articles on the subject. Happily for the surgeons, who had about arrived at a consensus of opinion in the surgical methods in the treatment of these cases, these "lightning bugs" have become in recent months less numerous. The dogmatical teachings, already referred to, are also being greatly modified and liberalized.

For the sake of brevity, let me say that in all fibroid tumors which have undergone cystic degeneration the propriety of their total removal with or without the uterus is a conclusion concerning which there is no debate. The non-cystic class, when projecting into the uterus, can be, as a rule, safely removed *per vaginam*, even when as large as an adult head. Such a case I reported some years ago, and the subject of the operation is still living and in good health. But it is only when such large tumors press upon and distend the cervix that their removal *per vaginam* is preferable to removal of the ovaries, or to supra-vaginal hysterectomy.

On the other haud, enucleation of submucous fibroids should not be undertaken, if it is reasonably certain that other small fibroids exist in the body of the uterus or project upon its serous surface. In such cases the removal of the ovaries is decidedly preferable; and this rule of action may safely apply to all fibroid tumors which are of the multiple or of the hard variety, and also to the softer variety prior to the time at which they have reached a size when hysterectomy, by reason of an available pedicle, might be done with a fair chance of success.

This brings us, then, to a consideration of those cases which are subserous in their relations. These tumors, when pediculated, should be removed by abdominal section. This opinion is based upon the observation of a number of pediculated fibroid tumors which persisted for many years after the establishment of the menopause; also upon the fact that they produce grave and troublesome symptoms leading to confirmed invalidism, and, in case of pregnancy, frequently endanger the life of the mother.

As will be seen, hysterectomy is left, therefore, for exceptional circumstances, such as when the condition endangers the life of the patient, and after

[1] Read before the Mississippi Valley Medical Association, 1890.

removal of the ovaries has failed, or until such measures appear useless from the start. Doubtless, hysterectomy is a grave procedure, and only justifiable when other means are of no avail. But to permit a woman to go from bad to worse until her vital forces are so exhausted that she will probably succumb to any surgical procedure, and then do upon her a supra-vaginal hysterectomy, is to subject the operation to an unwarranted test, and the surgeon to a foolish disregard of his own reputation. It is the old story of neglected opportunities for both patient and surgeon.

As to methods of hysterectomy, the extra-peritoneal plan of treating the pedicle is at present the best. Even when the pedicle is short, it may be lengthened by having first secured the cervix at the vaginal junction with an elastic ligature, bisecting the uterus, shelling out the tumor, and permanently securing the now lengthened cervix at a higher point; or, having separated the uterus by division of the broad ligaments between properly-applied ligatures on the outer side, and having clamped forceps on the uterine side, the object will be attained; or, separation of the bladder from the supra-vaginal cervix, and enucleation of the tumor prior to amputation of the body of the uterus, may result in a good pedicle. Finally, it may be advisable to take out the neck entirely, as has been repeatedly done successfully, notably by A. Martin, of Berlin, and Eastman, of Indianapolis.

The question of constriction of the pedicle is one of importance. For this purpose malleable iron wire has given excellent results; it has the disadvantage, however, of requiring a careful watch during the first seventy-two hours. The fact that elastic tubing used as a ligature takes care of itself, renders it safer than the wire; but, in my experience, the slough dips deeper into the cervix than when the wire is used. The best outer-dressing of the pedicle has been debated. Bantock simply packs the pedicle in dry thymol gauze. Tait, Keith, and others mummify it, some with the cautery, others with the perchloride of iron. After trying various methods, that which has given the greatest satisfaction is the following: After the abdominal wound is closed, the stump is hollowed out and trimmed down inside of its peritoneal covering as far as is safe, and a large quantity of subsulphate of iron (Fenton) is placed upon it. The peritoneal covering of the stump is "whip-stitched" across this as much as possible, a large piece of sheet rubber having first been securely placed below the pins and drawn firmly against the pedicle.

The space between the upper margin of the knob of the pedicle and the pins is carefully packed with gauze; over this packing and over the top of the pedicle the subsulphate of iron is freely sprinkled—in fact, the pedicle is thoroughly covered. A handful of gauze is then placed on the top of all this, the sides of the "rubber dam" are brought up over all, and the binder applied. A pedicle thus dressed emits no odor whatever, and requires no looking after until it drops off.

In a case recently treated by this method in my Sanitorium the temperature never passed the physiological limit (99.5° F.), the patient's pulse remained correspondingly good throughout, and she required no attenton beyond that given by the nurse.

Hysterectomy is an operation not to be lightly undertaken; although I had witnessed many cases among European surgeons during 1881, 1882, and 1883, it was not until after I had done a hundred abdominal sections that I felt entirely comfortable concerning an approaching hysterectomy. But the operation, in the hands of surgeons of experience and under proper surroundings, will improve in statistics and establish itself upon a sound basis.

DISCUSSION.

In discussion DR. L. S. MCMURTRY, of Louisville, said that, in considering this subject, it is necessary at the outset to recognize the fact that fibroid growths are of two distinct kinds—the multiple, nodular fibroids, and the large, soft, œdematous fibroids. These two classes are distinct pathologically and clinically, and require different methods of treatment. The multiple, nodular fibroid is a tumor which produces, as a rule, no serious troubles, and frequently disappears at the menopause. A simple exploratory incision into the abdomen has often been followed by disappearance of these tumors. When their growth is active, pressing upon adjacent organs, accompanied by menorrhagia, and exhausting the patient by loss of blood, the operation of removal of the uterine appendages is one of the most prompt in relief and satisfactory in results of the many brilliant operations known to modern pelvic surgery. The hæmorrhage is arrested, the tumors shrivel, and the patient is restored to health. The mortality of this operation in skilled hands is less than two and one-half per cent.

With the soft, œdematous fibroid or uterine myoma it is altogether different. These tumors may appear either early or late in life. The speaker removed one which occupied the abdominal cavity up to the epigastrium in a woman more than fifty years of age, while Dr. Sutton has the specimen of one removed from a girl of sixteen years. These tumors are not arrested in their growth by the menopause. They increase with rapidity; they press upon the bladder, kidneys, intestines, stomach, and the great bloodvessels; they excite frequent attacks of peritonitis; the patient is exhausted by pressure-symptoms; her feet and limbs swell, and emaciation and death follow after months of increasing suffering. The growths undergo cystic degeneration and in some instances they break down in places, forming suppurating cavities in the mass.

The only treatment for this latter class of uterine tumors is complete excision by supra-vaginal hysterectomy. In many instances the mushy, œdematous fibroids,

particularly if cystic degeneration has taken place, cannot be diagnosed from ovarian cystomata. The first supra-vaginal hysterectomy that the speaker performed he thought, before opening the abdomen, would be an ovariotomy. Operators of the widest experience and most acute diagnostic skill have had the same experience. Indeed, he said, it is not easy, even *after the peritoneum has been entered*, to distinguish a soft uterine myoma from an ovarian cyst. Both tumors are of a pearly hue, and both fluctuate. For this reason the operator who undertakes ovariotomy should be fully prepared to do supra-vaginal hysterectomy.

Of late, electricity has been much vaunted in the treatment of fibroid tumors of the uterus. Dr. Sutton merely mentioned this agent in his paper, probably purposely, because he knows that electricity does nothing toward arresting or removing these tumors. A peculiar feature about the application of electricity in pelvic surgery is, that those who a few years since denied the existence of certain forms of intra-pelvic disease are now foremost in the diagnosis and treatment of these same diseases by electricity. The application of electricity by puncture is fraught with great danger. The speaker has removed a uterine myoma by supra-vaginal hysterectomy, weighing sixteen and a half pounds, in which the entire anterior aspect which had been accessible to electric treatment was bound by dense adhesions to the omentum, intestines, and abdominal wall. It is because abdominal surgeons have the opportunity to see the results of electrical treatment that they are so universally opposed to its use. Much has been said of Thomas Keith's advocacy of the treatment of fibroid tumors of the uterus by electricity, but in a recent public utterance in this country, Dr. Keith's son announced that it is altogether a mistake that his father has abandoned hysterectomy, adding that he had just received a letter stating that his father had recently done a hysterectomy. This is a significant announcement at this time.

The important fact to grasp is that these tumors destroy life and that the operation for their removal is done to save life. The results of supra-vaginal hysterectomy, with extra-peritoneal treatment of the pedicle, in skilled hands are so excellent that the method is deserving of increasing confidence and wider application. It is not just to patients afflicted with uterine myomata to assure them that these tumors are unimportant, will do no harm, and disappear after the change of life. Operation should be recommended before adhesions have formed and before the patient becomes emaciated and exhausted.

DR. C. H. HUGHES, of St. Louis, said that he would refer to only one point in connection with the treatment of uterine fibroids, because these diseases were not in his line of practice. He has employed electricity therapeutically for twenty-five years, and for ten or fifteen years he has used it very extensively. In regard to the employment of the agent for the purpose of dispersing morbid growths, whenever a morbid growth has passed beyond the reach of the absorbent system and it is doubtful whether it can be influenced through the vasomotor mechanism that governs the arteriole circulation, then electricity is not likely to be of value. It is the empirical use of it, without due regard to its physiological impress upon the ganglionic centres and the circulation controlled by them, that is at fault. It is a misunderstanding of this fact which has caused much discrepancy of opinion in regard to the results of electrical treatment.

The subject of electrization in the control of intra-pelvic vascular conditions was studied long before Apostoli came upon the scene, and long before he stated that these conditions can be influenced through the vasomotor mechanism which controls the pelvic arteriole circulation, by galvanization. It will do in hyperæmia connected with the intra-pelvic viscera, just as in cases of cerebral hyperæmia, and those who have tried it as a therapeutic measure know that the effect is the same upon the viscera of the pelvic and abdominal cavity as it is on the cerebrum. Electrization, from the speaker's experience, applied to intra-uterine fibroids and other tumors of the pelvic viscera, is a valuable therapeutic measure.

In the early treatment of developing tumors of the pelvic or other viscera it ought, in every instance, to anticipate the knife; but in the later and final stages of many morbid growths it will not supplant surgical interference.

The true test of its value is in its control of conditions which promote the growth of tumors and in arresting their progress, while, at the same time, it improves the general tone of the patient and makes him or her more resistive to the local disease.

DR. RUFUS B. HALL, of Cincinnati, said that, although a number of surgeons claim that the intra-peritoneal method is safer than the extra-peritoneal method in supra-vaginal hysterectomy, yet with Dr. Price's record of thirty-one consecutive recoveries after operations, and the good results obtained by other operators, which prove it to be the best method yet devised, we have no reason to abandon it for the intra-peritoneal method. We know the peculiar nature of the tissue with which we have to deal, and the only safe method of controlling hæmorrhage is to have the wire external, so that it is under control. When the stitches are inserted in the abdominal wound the wire can be twisted with the serre-nœud as tight as before placing the stitches, but before closing the wound the wire will be quite loose, so rapidly does the stump shrink, and the serre-nœud will require two or three half-turns. This shrinkage goes on for a number of hours.

The speaker could not understand why Dr. Sutton recommended mutilating the tumor instead of making a long incision. He has seen tumors weighing as much as forty-nine pounds removed by supra-vaginal hysterectomy, and the wound heal as well as if the incision was four inches long. Many of the complications which occur from the effort of trying to remove a long fibroid through too short an incision, would not take place if a long incision was made. He is in favor of making an incision long enough to permit turning the whole tumor out at once, and which will not require removing the tumor in pieces, which is a very unsurgical procedure.

The question of making a pedicle is one that is exceedingly interesting to the operator, and of vital importance to the patient, and he regretted that Dr. Sutton had not seen fit to elaborate that very interesting point.

The speaker recently operated on two cases, in both of which, when the tumors were first turned out, the pedi-

cles were as thick as a man's thigh. These are the cases that try the operator's skill and patience. Of course, we can make a pedicle, but we do it with more or less difficulty, and the tension afterward is very great, and complicates and retards the convalescence.

DR. C. A. L. REED, of Cincinnati, thought that one of the most important points in the paper of Dr. Sutton was the reference to the common practice of advising non-interference when patients are approaching the menopause. The fact has been emphasized by Dr. McMurtry that the majority of fibroid tumors of the uterus do not disappear at the menopause. The statement was made by Keith, and has been repeated in many of the text-books, that they atrophy and disappear with the onset of the senile changes which begin at the change of life. The speaker recently saw a case under the care of Dr. Joseph Price in Philadelphia, of a woman who developed a soft myomatous tumor at the age of fifty-seven years. This tumor developed twelve years after the menopause had occurred, and an operation was done to arrest hæmorrhage.

A single case, such as this, and he thought there were others, completely upsets the theory which is based upon purely negative observations. He believes that many tumors with hæmorrhagic characteristics, that develop in elderly women, and which we are disposed to look upon as malignant, are undoubtedly cases of soft myomata; and with the demonstrated low mortality which follows the perfected operation of supra-vaginal hysterectomy, many cases might be subjected to operation which are allowed to go on without operative interference, only to die from a slow process of exsanguination.

NEW PROBLEMS OF NUTRITION IN HEALTH AND DISEASE.[1]

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(Concluded from page 186)

From all the facts in the preceding part of this paper the inference is to be drawn that chromatin contains iron as an integral part of itself. I resolved, if possible, to put this inference to the test of actual demonstration, but owing to the pressure of other work no opportunity presented itself till this autumn, when Mr. R. R. Bensley, working in the Physiological Laboratory of the University of Toronto, kindly undertook, at my request, the investigation. After fruitless attempts to demonstrate micro-chemically the presence of iron in the large nuclei of the salivary tubules of insect larvæ, it occurred to us to isolate large quantities of chromatin from the organs not concerned in blood-formation, as the liver is supposed to be in higher animals. For this purpose lambs' testicles were minced up, the cellular elements extracted with water containing 0.2 per cent. of hydrochloric acid, digested with pepsin and hydrochloric acid for several days until the clear fluid gave no peptone reaction, and the residue extracted first with alcohol, then with ether to remove fats and even the slightest trace of hæmatin. The chromatin so prepared gave no iron reaction in the cold with ammonium sulphide or with solutions of potassic ferrocyanide, but when ashed, and the ash extracted with weak hydrochloric acid, the extract gave marked iron reactions with ammonium sulphide, potassic ferrocyanide and ammonic sulphocyanide. These experiments were tried over and over again with the same result, and a number of control-experiments were also carried out to prevent mistake or error.

The iron in the chromatin cannot be detected by any of the ordinary chemical tests, and, therefore, is analogous to Zaleski's *hepatin*. It is only when the chromatin is heated with ammonium sulphide that any reaction occurs, and even then it is feeble, whereas with the hæmatogen of egg-yolk it takes place much more readily and distinctly.

Mr. Bensley has also prepared small quantities of chromatin from the thymus of the calf, and has found that it too contains iron as firmly combined as is that of the testicle.

I think that it is now definitely determined that *the nucleus of every living animal cell contains an iron-holding proteid, and that this compound is the one which is regarded by cytologists as the controlling factor in the life of the cell.* I propose to keep the name chromatin[1] for this compound and leave the term nuclein for a derivative of it.

It may be asked how it was that the earlier students of the nucleins overlooked the presence of iron. They usually separated the nucleins by peptic digestion, then dissolving the residues, and washed with ether and alcohol, in solutions of caustic soda, precipitating them therefrom with hydrochloric acid, redissolving and reprecipitating several times. The precipitate so obtained, the so-called soluble nuclein, cannot, after such a thorough course of treatment, be held to represent the original chromatin. The nucleins which the earlier chemists isolated from the egg-yolk were put through this vigorous method of preparation, and it is not surprising that the observers did not detect the iron in them which Bunge found to be present only a third less abundantly than in hæmoglobin of mammalian blood, and little less so than in the hæmoglobin of chicks. *A priori*, we should expect that the ground-substance of life has a more complicated constitution, a larger number of atoms of each of the single chemical elements present in it, than albumin or globulin. Yet chemists have approximately determined the formula of nuclein as $C_{29}H_{49}N_9P_3O_{22}$, while Zinoffski[2] has given good

[1] Delivered as one of the lectures of the Post-graduate Medical Course of the University of Toronto, December 20, 1890.

[1] The fact that chromatin gives origin to hæmoglobin and probably also to nuclein, renders the name very appropriate.

[2] Ueber die Grösse des Hæmoglobin Moleküls. Zeit. für Physiol. Chemie, Bd. x. p. 16.

reasons for believing that the molecule of albumin or globulin contains more than thirteen hundred atoms of carbon with the atoms of the other elements present in it, correspondingly numerous.

As I have already indicated, hæmoglobin[1] is derived from the chromatin of the hæmatoblast. Now, the formula of the hæmoglobin molecule is, according to Preyer, $C_{600}H_{960}N_{154}FeS_3O_{179}$, or, according to Zinoffski, $C_{712}H_{1130}N_{214}S_2FeO_{245}$. Can we conceive then of a nuclein, if it be like chromatin, and with a formula of $C_{29}H_{49}N_9P_3O_{22}$, giving rise by degeneration or otherwise to a compound of the formula $C_{600}H_{960}N_{154}FeS_3O_{179}$? If so, then a compound by degeneration or otherwise gives rise to one in which the atoms are more numerous, the oxygen relatively less abundant in volume and, therefore, the chemical energy greater. To take this position is to overthrow all our ideas of assimilation. Is it not simpler to assume, as Bunge has done in the case of hæmatogen, that only vegetable cells can, under the influence of sunlight, store up energy in the form of complicated compounds, of which the chromatins are examples, compounds which when transferred to the animal cell undergo transformations and present phenomena which are grouped under the term vital?

In the hepatin of Zaleski and in the chromatin of the testicle and thymus, the iron is as firmly combined as it is in hæmatin or in hæmoglobin. Such a firm combination means the storage of energy. Can we believe that the animal cell is capable of such a storage? The animal cell cannot build up albumins out of any simpler substances.[2] It is evident that the chromatins are more complicated than the albumins. It is reasonable on this ground alone to conclude that the chromatins are derivable from the vegetable cell more or less directly. This explains why such care is taken by nature to provide the embryo with a supply of chromatin which will suffice until it reaches that stage of existence when it can maintain the supply from its food. In the placentæ of cats, which I studied, I found that the endothelial cells of the maternal bloodvessels were hypertrophied, that these eventually disintegrated, and that their chromatin was swallowed bodily by the covering cells of the fœtal villi. I found, further, that in the glands at the base of the mucosa the epithelial cells proliferate and finally disintegrate, and their chromatin is cast only into the lumen of the gland. Where the fœtal villi break through the walls of these glands the fœtal epithelial cells, amœboid in outline, absorb these chromatin masses and granules. There are also, especially in some of my preparations of the placentæ at a certain stage, solid columns of chromatin in the ovial portions of the villi. At a later stage these chromatin masses are smaller and seem slightly changed in chemical composition and are like mucin in some respects. I found also *that amœboid cells were engaged in transferring the chromatin from the neighborhood of the epithelial cells of the villi and from the ovial portions of the villi to the blood-channels.* The chromatin so transferred from the maternal to the fœtal tissues is evidently the vehicle for the iron which the embryo receives and which, as shown by Bunge, is much greater in amount per kilogramme of body-weight in the newborn than in the older or adult animal.

This brings me to one of the problems of this paper. If chromatin is, as I have said, derived as such, either remotely or directly, from the vegetable kingdom, how is it taken into the system? I may say that this is one of the problems which I propose to study in the next few months. Without prejudging the question, it is possible to touch on some of the aspects of it which raise other problems for solution. As I have intimated, amœboid cells in the fœtal villi are concerned in the transference. We may infer from this that the amœboid cells of the adult, the leucocytes, play an important part as chromatin-carriers. As the covering cells of the fœtal villi are from their shape engaged in the absorption of chromatin, it is possible also that the intestinal epithelium of the adult individual is capable of absorbing very small particles of chromatin. It may be that the leucocytes which, as Stöhr and others have shown, wander out into the intestinal cavity or to the free surfaces of the epithelial cells, take up from the chyle particles of chromatin.

If the leucocytes are the principal agents in the absorption of chromatin, we may explain the existence of hæmatoblasts and the formation of hæmoglobin. For in *amblystoma* larvæ at an early stage the first blood-corpuscles are *amœboid;* they wander about in the tissues and especially among the yolk-cells, and they in consequence are capable of obtaining a greater quantity of yolk-spherules than the fixed cells. These yolk-spherules contain the hæmatogen of Bunge and, therefore, the corpuscles have a greater supply of chromatin, which is utilized in the repeated and rapid divisions of the hæmatoblasts. This greater abundance of chromatin in the hæmatoblasts has been noticed by Flemming, Pfitzner, and Peremeschko. Obviously, with a greater quantity of chromatin than the dividing cell usually has, some of it is useless as such, degenerates and appears as hæmoglobin. Such,

[1] The pigment of muscle-fibre, the myohæmatin of MacMunn, the hæmoglobin of Levy and Hoppe-Seyler, in *amblystoma* larvæ, is apparently derived *directly* from the hæmatogen.

[2] Apparently the animal cell is capable of converting simple compounds into more complicated ones by the process of hydrolysis only, as, for example, peptones in albumins.

amœboid corpuscles are most abundant in the neighborhood of the yolk, and they are collected in large numbers at a certain stage in the smaller vessels connected with and lying on the yolk-holding organ. The blood-current in these vessels being slow the hæmatoblasts are then delayed where they divide and redivide, and eventually are converted into fully-formed red corpuscles. After a certain stage only one of these collections usually persists. This becomes the spleen, which *is thus developed in intimate relation with the hæmatogen-holding organ. When the yolk is nearly absorbed, the leucocytes make their appearance as such;* but I maintain that the first blood-corpuscles of the embryo are leucocytes, or amœboid cells of the same nature and origin as leucocytes, but become hæmatoblasts because they have absorbed or taken up an excess of chromatin from the yolk. In like manner we may account for the apparent absence of leucocytes from the mammalian embryo up to a certain stage of its history. The first blood-cells are really leucocytes, but as their principal function is to carry chromatin from the villi to the embryonic organs, they are loaded with an excess of chromatin, a part of which, on the *lunus-consumption* principle, they probably convert into hæmoglobin. From the absence of leucocytes during the first six weeks of human embryonic life it might be reasonably inferred that the greater part of the chromatin which the embryo receives is obtained during those six weeks.

In adult mammalia the whole or the greater part of the chromatin of the hæmatoblast is converted into hæmoglobin, and as a result the chromatin-holding organ, the nucleus, is no longer necessary, hence it degenerates and disintegrates, as Osler believes, or is extruded from the cell, as Rindfleisch and Howell maintain.

The animal body is very saving of its chromatin. I found this well illustrated in my studies on the pancreas and intestinal epithelium of amphibia.[1] When a cell disintegrated the débris became swallowed by the immediately adjacent cells, the cell-protoplasm of the swallowed particles speedily dissolved, leaving the chromatin alone in cavities of the cell. Secretion on the part of the containing cell continued, but *the nuclei enlarged as a result of the solution of chromatin in the cell, frequently to twice its original size. The amount of chromatin in such enlarged nuclei is greatly increased.*

Now I come to a brief consideration of what I call the storehouses of chromatin. By this I mean that the giant cells in the bone medulla of higher animals and in the spleen of some mammalia. I cannot enter into the reasons here in this already long article why I so consider them. It is sufficient to say that these giant cells store up the more or less changed chromatin, so that it can become available to the immediately adjacent hæmatoblasts, or, to speak more correctly, marrow cells. There are also giant cells in pathological growths, for example, myeloid sarcoma and tubercle. In the former the chromatin is derived primarily from the numerous disintegrated and often from swallowed leucocytes. I believe from my observations, that in tubercle the giant cell is derived in the following way: The epithelioid cells are injuriously affected by the ferment or more probably albumimose secreted or produced by the tubercle bacillus, and also by the lack of such nourishment as a proper blood-supply brings. As a result of this the cells degenerate, disintegrate, and their chromatin is set free. One or more of the surviving cells at the periphery of the tubercle immediately absorb or swallow the free particles of chromatin, and as a consequence nuclei of such cells have to multiply perhaps a hundred times to accommodate the increased supply. With such a supply of chromatin it is not surprising that such cells can withstand their unfavorable environment. Indeed, I believe that the absence of bacilli in many of such giant cells is to be explained on the supposition that they throw out or secrete from their nuclei a compound, albumose or other material, which overwhelms the bacilli. Could we artificially produce that compound we would have a therapeutic agent which would rival all others brought forward since the history of medicine began. I have indicated in one of my papers[1] facts which show that the pancreatic ferment arises from the chromatin of the pancreatic nuclei as a *prozymogen* compound which is deposited in the cell protoplasm, and probably united with an element of the latter as zymogen, and as this gives ferments which are now regarded as albumoses, we may readily believe that Hankin's defensive albumoses are derived from the chromatin of the cells of the system.

As the vitality of the cells and, therefore, of the adult individual depends on the amount of chromatin, we can possibly account for the absence or the presence of the quality of immunity to diseases. Can it be that the individual readily disposed hereditarily to contract, say tuberculosis, has received less than the proportionate amount of chromatin in embryonic life? Has the vigorous individual at such a period received an abundant supply of chromatin? We know that iron is beneficially administered in wasting diseases and often in tuberculosis. Is the explanation of its action that of a tonic or so-called hæmatinic?

[1] Results of these studies are to appear in a forthcoming number of the Transactions of the Canadian Institute.

[1] In a forthcoming number of the Transactions of the Canadian Institute.

Rather, I believe, that it protects the iron-holding proteids of the food in the intestinal canal from decomposition, and thereby permits a larger quantity of such proteids to be absorbed to increase the chromatin of the system and therefore its vitality? Is it possible to increase the amount of chromatin in the system by any other process than intestinal absorption? Bearing in mind the fact that in the cat's placenta chromatin is transferred from the maternal to the fœtal tissues under conditions which constitute complete asepsis, it is possible that a similar endowment of the adult system with chromatin may be brought about by hypodermic injection under aseptic and antiseptic conditions. I think that in the future the latter may be found quite feasible. Indeed, I believe it has already been done by Brown-Séquard, with extracts of the fresh testicle, and that this transferrence, hypodermically, is the cause of the beneficial results so obtained.

The reader will observe what a large number of questions are connected with the absorption of chromatins. It is not possible to formulate in this article all the aspects of the relation of chromatin to nutrition, and I will merely touch briefly on some of the clinical considerations which present themselves in my mind.

Simple anæmia and chlorosis are usually held to be diseases in which the blood-formation is diminished, and which is caused by the lessened absorption of iron salts from the food. Bunge believes that they are caused by a lessened absorption of the hæmatogens of the food, and that this lessened absorption is brought about by decomposition in the intestine of hæmatogens through alkaline sulphides. Anæmia and chlorosis in either case are caused by a lessened resorption of those materials which go to form hæmoglobin. Now I maintain that *both diseases are primarily due to a lessened absorption of chromatins from the food, and that the diminished hæmoglobin formation is merely symptomatic of this condition and does not constitute the primary trouble.* Every cell in the body suffers from want of chromatin, and, as there is a lessened supply of chromatin, less can go to the formation of hæmoglobin. With the lessened supply of chromatin the tissues cannot grow to their usual volume through cell-division, and, therefore, we find in the bodies of chlorotic patients, who come to a post-mortem examination, that condition which Virchow describes as *hypoplasia*, and which he apparently believes to be the cause, in some cases, of chlorosis. In these cases the organs, notably the aorta and large arteries, are of narrow calibre, they are not as fully developed as one would expect in such individuals. No doubt the lessened calibre of the great vessels diminishes—through the increased resistance they offer—the effective power of the heart in driving the blood to the various organs, and thereby diminishes also the nutrition of the various parts, but this I think is a secondary trouble, the primary one being the lessened absorption of chromatins and the thereby lessened proliferation of the tissues in the various organs, the aorta and other bloodvessels amongst these.

Bunge, in one of his papers, hints at the hypothesis that, in young girls at puberty, there is a storage of hæmatogens in some organ which are to be transferred to the developing ova when impregnation takes place, and that at puberty in chlorotically inclined patients this organ makes a demand on the hæmatogens of the body, which would otherwise go to blood-formation. There is some truth in this view. At the commencement of puberty the ovaries and the uterus enlarge, and the uterine mucosa consequently undergoes an increase in volume; this means, of course, an increased supply of chromatin, and if the system is deficient in this substance chlorosis results. Why should there be a deficiency of chromatin in the body of such individuals? I may say that probably intestinal decomposition of the food-chromatins before puberty might bring about such a diminished supply in the body, but I think I can better answer such a question by asking another: Are there any great variations in the quantity of chromatin which is transferred from mother to child through the placenta? If, as I maintain, the digestive ferments arise from the chromatin of the cells of the digestive organs, any lessening of the usual amount transferred to the child through the placenta must lessen the amount of the digestive ferments secreted in the adolescent body, and, as the supply of chromatin given through the placenta cannot be made up by intestinal absorption, because of the diminished digestive function, the adolescent female reaches the period at which puberty begins with a seriously diminished supply of chromatin, and chlorosis, probably in many cases with hypoplasia, is the result.

As already intimated, the greater part of the chromatin is probably transferred, during the first six weeks of pregnancy, from the mother to the fœtus. Are the nausea and vomiting of pregnancy caused by such a transferrence with a consequently diminished secretion of digestive ferments and lessened digestive vigor? At any rate, the anæmia during and following pregnancy is easily explained, as will be understood from what I have said, by this transferrence.

Under the so-called pernicious anæmia we apparently group a number of conditions. Some of these I shall treat of again, but at present will refer to one or two forms of this disease. It has been found, on post-mortem examination, that the gas-

tric mucosa is atrophied. In such cases it is evident that the food is only half digested, and, therefore, only half the chromatins are set free from the other proteids, and that only half the usual amount of chromatin is absorbed. Further, the pancreatic ferments are also probably thereby lessened, and less still of chromatin isolated and absorbed. With atrophy of the gastric mucosa the putrefactive germs gain free entrance, putrefaction in the intestine is enhanced, and it is not surprising that the result is fatal. In some cases of pernicious anæmia, no doubt, there is hæmolysis as Hunter has, I believe, shown, and Mott ascribes this hæmolytic function to an albumose produced in the intestine and absorbed into the bloodvessels. Such cases more truly constitute blood-diseases than simple anæmia and chlorosis do. We may suppose in such cases of albumose-absorption that the food-chromatins are decomposed by the germs which are the agents in the production of the albumose.

Once again, if the leucocytes are the active agents in the absorption of chromatins from the food, is splenic leukæmia due to an over-resorption of food chromatins?

I have put many of the problems arising out of the relation of the chromatins to nutrition in the form of questions. I hope they will stimulate others to seek for solutions to them, as I have been stimulated to work up the basis on which these problems rest. I may be pardoned for believing in the importance of these problems, for who could think and work for four years on subjects such as I have here treated of without considering them to be of great value. I may also say that I think more attention ought to be paid to the physiology of cells than is done even at the present day. Cytologists have been principally engaged on the structure of the cell, because results are more easily won in that line. From what is here said I hope more attention will be directed to the great value of the study of the seemingly hidden processes which are grouped under the name of cell-physiology. If we could particularize as to what changes other than structural occur in the cell, we *might* generalize about the colony or the mass of cells, or the individual formed out of them. In that case also we probably could do in the way of therapeutical treatment what we think fanciful and extravagant now. In any case I hope I have thrown a little light on a dark road, along which we may travel there is no knowing how far. It will be seen in the several papers which I shall publish upon the subjects touched on here on what evidence my views rest.

CLINICAL MEMORANDUM.

PÆDIATRIC.

The Treatment of Convulsions in Children.—In a case of convulsions in a child, if the patient is cyanotic, a few whiffs of amyl nitrite, followed by inhalations of chloroform to relax spasm, should be given. These should be followed as soon as possible by hypodermic injection of tincture of veratrum viride, one-half drop for each year of age up to six years. The veratrum may be repeated in half an hour or an hour if the convulsions recur. If the convulsions are uræmic, a small dose of morphine may be added or given separately.

In all the cases in which I have employed the foregoing treatment the effect was remarkably good, and in but one case have I had to repeat the injection of veratrum. The convulsions cease, the muscles relax, the pulse becomes slower, the temperature falls, and the skin becomes moist.

Indeed, the danger is over in less time than by any other means I have seen employed.

Appropriate after-treatment, as may be indicated, should of course be adopted.

Theodore G. Davis, M.D.
Bridgeton, N. J.

ORIGINAL LECTURES.

PLEURITIC EFFUSION—SOME PECULIARITIES OF TYPHOID PNEUMONIA—THE TREATMENT OF CONSUMPTION BY KOCH'S LYMPH.

A Clinical Lecture
delivered at the Pennsylvania Hospital.

By J. M. DA COSTA, M.D., LL.D.
of Philadelphia.

Case I.—Gentlemen: I thought you would still be interested in this case of effusion into the chest that was before you on another occasion. The man has been doing remarkably well, and we have had no occasion to change the treatment that was ordered when you last saw him. You remember that at that time he was placed upon 20 grains of acetate of potassium, 15 drops of the tincture of the chloride of iron, and 5 drops of dilute acetic acid in syrup of lemon and water every fourth hour. The affected side was painted with tincture of iodine, his diet was restricted almost exclusively to solid food, and, in addition, two or three times a week he had a saline laxative consisting of two drachms of sulphate of magnesium, which was sufficient to produce free action from the bowels. Under this treatment we have had excellent results. His heart which, as you may remember, was displaced, is now in its natural position; you will recall the dulness on the right side, which does not begin until the midsternum is reached, indeed, a little to the left of midsternum. The region over the lungs shows no dulness until we reach the sixth rib, and at the upper part of the chest, both anteriorly and posteriorly, we have vesicular breathing. About the fourth rib anteriorly a friction-sound is perceived, but the vesicular breath-sounds can be heard even low down in the chest posteriorly until we come to the very lowest limits, where they are still feeble. The vocal vibrations

are also heard naturally until quite low in the chest; the fremitus is not, however, perceived below the angle of the scapula, it has not improved in proportion to the other physical signs, but, considering the whole result, it may be said that the effusion has almost disappeared. Under these circumstances we can do nothing better than to continue this treatment. I believe complete recovery will soon take place.

TYPHOID PNEUMONIA, WITH OBSERVATIONS ON ITS TEMPERATURE-RECORD.

I had ready for you two cases of typhoid pneumonia, but I shall have to limit myself to exhibiting one case only, because in the second case, while he is doing well enough as regards the typhoid pneumonia, a complication has developed in the shape of a swelling of the glands of the neck which makes it too great a risk to move him from the ward. I will show you this case, however, which is a very typical one. He was admitted on December 29th, and at that time had had fever and cough for three days. The sputum was admixed with blood, he had a pulse of 120, respirations of 36, and a temperature of 103°, which soon rose to 104°. There was impaired resonance at the upper part of the left lung anteriorly. Anteriorly the right, from the clavicle down to the fourth rib, was dull on percussion, and posteriorly it was dull throughout. There was also slightly-impaired resonance at the lower part of the left lung. The breath-sounds on the left side were harsh and accompanied by crackling râles at the upper part. On the right side anteriorly there existed bronchial breathing down to the fourth rib, and posteriorly an occasional moist râle. There was, therefore, lobar pneumonia of the right lung, except at the lower part anteriorly. On the left side there was also bronchial catarrh as a complication and some consolidation at the apex, so that, in some respects, we might have called this a case of double pneumonia.

There were other points of interest in the case. The man presented a dry, cracked tongue like that of typhoid fever, a pulse of 120, which, however, after a day or two declined to 108. The pulse was very fluctuating, occasionally reaching 124. The respirations varied between 36 and 54; the sputum remained rusty, great exhaustion manifested itself, and, in truth, what might be called a typhoid condition became so marked that we entertained, though we set it aside, the possibility of the case being one of typhoid fever with a lung complication. The man's nervous phenomena were those of wild delirium, and so wild was the delirium that he had to be strapped. While, then, the signs of the disordered nervous system, the dry tongue, the frequent pulse, the evident exhaustion, the sweating, all pointed to a typhoid state, the bowels remained in their natural condition—about one movement daily. The passages were not liquid except on one day, when there were several. He never had an eruption. The case was so strikingly like one of typhoid fever that we had our minds on that possibility for some days. Now, however, it is proved that the first impression was correct, it was simply a case of typhoid pneumonia with grave symptoms referable to the nervous system and with the signs of marked prostration.

This morning you see him in a very much better condition than when he came into the hospital. His tongue is becoming moist, the delirium ceased three days ago; his pulse this morning is only 60; his respirations are 22, and his temperature 97⅘°, the highest temperature being 104⅗°, so that you see before you, certainly as regards his rational symptoms, a convalescent.

Now let us see how these symptoms correspond to the physical signs. You may recollect that we had some dulness of the left apex; that is now gone, the percussion resonance there being clear. On auscultation there is simply slightly harsh vesicular breathing. The area of consolidation has therefore gone. On the right side, where marked disease existed, we have now clearness on percussion anteriorly and, what is very interesting, under the right clavicle, the middle of the right lung, the sound has a slight tympanitic admixture, a condition of things to which I called your attention in a previous case. On auscultation anteriorly we have harsh but vesicular breathing, mixed with a few, rather coarse, moist râles, so that it is evident that almost complete resolution has taken place. When I tell the patient to get up he does so with difficulty, and on auscultating the back I find that the bronchial sounds have disappeared, but there is some harsh respiration, with rather marked expiration near the angle of the scapula; the breathing is everywhere vesicular, however, with a few coarse râles. Therefore, practically, the pneumonia is over. This is a very gratifying result, if you remember how very ill this man was.

Before I take up the subject of his therapeutics, I will say that the urine was examined throughout and showed no albumin. I wish also to call your attention to the temperature-chart, which is very interesting. You see here the elevations of temperature. I will not go into details, but they range between 103° and 104°; after reaching 104° there are slight variations, and then a rise to 103½° until the 27th; and from that time on, with slight rises, the temperature gradually, but uninterruptedly, fell, so that this case of typhoid pneumonia has convalesced as many cases of ordinary pneumonia do, by what you might call a crisis. The temperature-chart is singularly interesting from this point of view. If we had had any doubt that this case was one of typhoid fever with lung complication, on account of the gravity of the other symptoms and the typhoid condition which appeared to be present, this temperature-chart would be most significant. This leads me to remark that the diagnosis between typhoid fever and typhoid pneumonia is often an extremely difficult one on account of the symptoms called, for convenience' sake, typhoid, namely, impairment of the nervous system, dry tongue, signs of exhaustion, and the like; but what you do not have are the characteristic temperatures of typhoid fever. Again, you do not find, or certainly very rarely, in typhoid pneumonia a sustained temperature; in other words, you will have the ordinary temperature of pneumonia—the time will come when the temperature drops so rapidly that you will have something approaching to a crisis, without the rises and falls found in the beginning of convalescence from typhoid fever. Further let me say that while the temperature-curve in typhoid pneumonia is, in the main, similar to that of ordinary pneumonia, yet what is called the crisis, viz., the sudden cessation

of the fever, is more prolonged in typhoid pneumonia than it is in ordinary pneumonia. In the case before us this crisis has extended over four days, whereas in an ordinary case of pneumonia it would have taken place in twenty-four or, at the utmost, thirty-six hours.

Now that I have explained to you this case from a pathological and diagnostic point of view, let me make some remarks as to its treatment. When he was admitted he was given a fever mixture of citrate of potassium, together with carbonate of ammonium; he also had twelve grains of quinine daily. To this treatment turpentine was added on the 28th, ten drops every fourth hour. Occasionally we gave him hyoscine at night, in doses of $\frac{1}{120}$th of a grain, which quieted him, and gave him relief for two or three hours; especially quieting the delirium. This is an interesting example of the usefulness of hyoscine in acute diseases. On the first few days, half an ounce of whiskey was given him every fourth hour, but when the typhoid symptoms showed themselves we gave it to him every second hour. Of course, he was given nourishing food, milk, broth, and the like. For the rise of temperature, which exceeded 104° on one occasion, salicyl-bromanilin was given—the new compound of salicylic acid, bromine, and anilin, which is to take the place of phenacetin. The drug was given in doses of five grains, and the effect in this case was good. In these doses it at once reduced the temperature a degree and quieted the nervous system. We had previously given the patient phenacetin, so that the observation was an interesting one, and while we found, on comparing the effects of the two drugs in the same case, that phenacetin in small doses lowered the temperature more (even three grains had more effect than five grains of salicyl-bromanilin), yet as regards its influence in quieting the nervous system, in the procuring of sleep, in the lessening of delirium, and in the general effect on nervous tension, the new remedy proved the better.

It is instructive to study the delirium in this case, and to see how it was influenced by the different drugs and by stimulants. Remember that it was so violent that we had to restrain the man in bed by force. The greatest effect from any of the agents we used was from hyoscine. Atropine and morphine, which we employed on one or two occasions, had very little effect in doses of $\frac{1}{6}$th of a grain of morphine and $\frac{1}{120}$th of a grain of atropine. The stimulants neither increased nor diminished the delirium. Next to hyoscine, the best effects were from the salicyl-bromanilin. We have, therefore, studied this case therapeutically, and I hope you have learned some valuable lessons in treatment. We have learned that sustained nourishment, stimulants, and quieting the nervous system, are the most important points in the treatment of typhoid pneumonia; if you will keep up the patient's strength the pneumonia will undergo resolution, or at least you gain time for other remedies to act.

CASES OF EARLY PULMONARY TUBERCLE TREATED BY KOCH'S LYMPH.

I wish to show you, in conclusion, two cases of early tubercular disease treated by the Koch method. As you will see from the long temperature-charts and papers, we have worked upon these cases carefully; or, rather, let us give credit where it belongs, the resident doctor and the nurses have worked most admirably and assiduously. It is no easy matter to conduct cases under Koch's treatment accurately and scientifically, because they take a large amount of time, especially because the temperature must be taken every hour or two, often at night.

I show you these two cases because I think we have had them long enough, and watched them closely enough to reach some conclusion with reference to them; moreover, they were especially selected cases out of a number that were presented to me. I choose these two cases for the following reasons: They were free from fever, or had almost no fever; there were no signs of softening; they were comparatively early cases, and in good general condition, except in so far as any disease like phthisis would impair the general condition. Moreover, we took the precaution for more than a week beforehand to study the physical signs and the sputum, the latter being carefully examined for bacilli; and we took every opportunity to watch the cases while uninfluenced by remedies. Though much alike, I will take up the cases separately.

P. C., aged twenty-five years, admitted December 22, 1890. There is no family history of phthisis. He had been working in a foundry, and subjected to sudden changes of heat and cold; had to stop work two weeks before admission. He has been growing weak and losing flesh, and has had cough for six months, but no night-sweats. He has never been ill before. The cough is very troublesome, especially at night.

The physical signs were as follows: The circumference of his chest was 34½ inches, and there was expansion of one inch. Anteriorly on the left, the percussion-note was good; on the right, dull down to the second rib. The sounds at the left apex were harsh and the expiration prolonged; at the right apex very harsh, or rather there were feeble inspiration, prolonged expiration, and dry crackling râles; below, the sounds were impaired, and there was an occasional râle; that is to say, the vesicular sound was heard, but impaired. Posteriorly at the left apex, percussion-note dull, at the middle impaired, and at the base good. On the right, percussion-note dull all the way down, and impaired in the right axilla. Therefore there was a general infiltration without any softening on the right side, with localized physical signs of a greater amount of consolidation to the fourth rib. His cough was, as I said, especially troublesome at night. The expectoration was greenish, muco-purulent, and bacilli were found in moderate quantities. There was almost no fever before he received the injections; his evening temperature was never higher than 100°, and reached that point on only two occasions; as a rule, it was 99°. Now, gentlemen, having had him under observation here before we began the injections, from December 22d to January 3d, when the first injection was made, I think we are in a position to say that he did not vary much from his previous condition; I think his cough, under rest, and the slight amount of anodyne which he took when he was unable to sleep, grew somewhat better. We began the injections with a small amount of lymph, only a milligramme, or even a little less; then we gradually increased the amount, and took the precaution of always letting a few days elapse between the injections, so as to get him back to a perfectly natural condition. We have now given him six injections. At first, after the small injections, there was very little reaction, but after the later injections there has been

very distinct reaction; on one occasion, after the injection of three milligrammes of the fluid, the temperature even reaching 104°. The full reaction from these three milligrammes, however, did not occur until the next day. I see marked on the chart another great rise, which was after four milligrammes were injected. Since then he has twice been given four milligrammes with very slight rise. Now, from four milligrammes, the third injection before the last one, the temperature went up to 103°; we know then that at present the dose, which can be given to him without much reaction, is four milligrammes.

Time will not allow me to go as fully into the description of the second case as I have into the one you have just seen, but here is the temperature-record, and you will see that there are the same rises of temperature, and tolerance after a time to the same dose as in the first case; or, rather, in the second case it requires at present a larger dose (six milligrammes) to produce the reaction. The temperature goes up now very little above the normal, at the last injection rising only to 100°. It is evident, therefore, that the dose will have to be increased, and we will give him eight milligrammes at the next injection. The dose for the first case shall be in the future five milligrammes.

Now you will want to know what effects other than the reaction have been produced in these cases—I can speak of the two cases as one, for the action has been very similar in each. Whenever there was marked reaction there were lassitude, languor, and pain in the limbs the next day, just as Koch has stated; when the reaction was slight these symptoms did not occur: in that respect our observations are entirely in accordance with the now classical description given by Koch. As regards the sputum, it undoubtedly has been very much diminished in amount, and the patients expectorate more easily. We found bacilli in abundance in the expectorated matter; some of them were living, others were materially changed, and seemed to be shorter and swollen, an effect that has been noticed by other observers. Then, again, the men say that a day or two after each injection they have a little soreness in the chest; my attention was particularly called to this in Case I., and on examination I found a friction-sound on the right side at the limit of the previous dulness, and I really think that the dulness was increased in extent; certain it was that the lung was more congested at this point, and that there was an intercurrent pleurisy. Thus there seems to have been a well-marked increase in the area of irritation or congestion in the first case. It is very significant that whenever we allowed five days to elapse without giving them anything, these fresh spots of irritation cleared up very materially, so that the pathological condition was a passing one. At present these cases are free from fever except after the injections—in that respect they are in the same condition as when the treatment was commenced.

Now, gentlemen, you will want to know something more general. I will make a few remarks concerning the constitutional effects. Undoubtedly the freeing of the expectoration, the large number of bacilli that are found in the sputum, the signs that an active process is determined in the diseased parts by the injections, have all been confirmed by a trial of these two selected cases. As regards their feelings these patients express themselves as better. and it is significant that their cough is improved; they do not cough as much at night now, and they sleep well; so that these patients have improved under no other remedy than the lymph. When we come to the graver question, namely, Are they cured? I must say no. I did not take the time this morning to go into a physical exploration of their chests, but I have done so within a day or two, and in both instances the physical signs were very little changed from those noted at the time of their admission. So that, although the signs of disease in the lungs are, strictly speaking, not improved, the general condition is improved, In the first case, however, the resident physician thinks there is a little freer breathing and a little clearing up on the right side. There are no night-sweats, but there were none before the beginning of treatment. There is but little or no change in body weight in either case.

These two cases, and other cases which I have watched, have led me almost to the following conclusions, though I admit that it is premature to come to any general conclusions concerning so new a remedy: First, that Koch's lymph is of very little use in the treatment of consumption in cases in which softening has commenced. Second, that in early cases of pulmonary consumption, and the cases before us are strikingly in favor of this view, amelioration takes place in the general condition.

These two cases are of particular interest, because no other treatment has been pursued; they are having the rest and regulated food of a hospital, but no medicines. Their cough and breathing are better. Therefore, in the early cases, amelioration unquestionably takes place in the general condition under the use of this remedy.

Now, you will ask me, Does cure take place? Is the lymph a specific? I say again that it is premature to speak of it as a curative agent; having watched cases for some time I can frankly say that I see nothing as regards the physical phenomena from which I could expect a cure, nor have I, in reading the records of cases, been able to see that any observer whose opinion is of weight has brought forward a single case in which a cure has been proved. The remedy, therefore, is applicable to the earlier cases only—giving a certain amount of relief, but I question whether, even in the early cases, it will have a distinct curative effect. This opinion does not apply to the effects of the remedy on lupus or on tubercular disease of the joints; in such cases great good has already been accomplished, but I have had no experience with it except in pulmonary tuberculosis. Again, I believe it best, when you employ the remedy, not to repeat the injections too rapidly. Let the patient completely recover from the effects of each injection.

Let me call your attention to two other points: First, no case should be treated unless we have at the same time control cases; you should select a case of almost the same character as regards extension of the disease, and put him on remedies that will for the time being relieve the cough, and see what they will do under the hospital discipline and regulated food. This is what we are doing with some cases now in the ward. Secondly, I must raise my voice against the use of this remedy for diagnostic purposes. Since the knowledge gained by the reports of recent autopsies made by Virchow, I think

it would be cruel to subject the patient to the risk of the dissemination of the disease; we do not yet know anything certain about its composition, though we have been told that it is derived from the culture of tubercle bacilli, and if used for diagnostic purposes we may disseminate tubercles in a person in whom the disease was local. Therefore, do not use this for diagnostic purposes; we have no right to subject a person to the possibility of becoming tubercular in order to settle a diagnosis which, in nine hundred and ninety-nine cases out of a thousand, can be settled by other means. I think, with our present knowledge, it is rash—criminally rash—to employ it for such a purpose.

MEDICAL PROGRESS.

A Powder for Vegetations of the External Genitals.—URRIOLA is said to use the following prescription for the removal of these growths:

℞.—Salicylic acid . . . . 30 grains.
Acetic acid . . . . 1 ounce.

This mixture may be applied once or twice a day by means of a small brush. The pain is very slight and fugacious, and Urriola believes that this treatment is preferable to any other.

Ointment for Eczema of the Nipple.—BRAUN is stated to recommend the following prescription in this condition:

℞.—Calomel . . . . 45 grains.
Carbonate of magnesia . . 40 "
Cold cream . . . . 1 ounce.

This ointment is to be applied with friction to the part which is affected. The reddened and sensitive areola which surrounds the excoriation should be anointed night and morning with the glycerole of tannin. All applications should be carefully wiped away before the infant nurses.

The Treatment of Sycosis.—ROSENTHAL recommends the following treatment for sycosis, stating that it possesses three advantages: 1st, the absence of pain; 2d, the relatively rapid cure; and 3d, facility of application.

The part which is affected should be shaved very carefully, and morning and night, for three days, the following ointment should be applied:

℞.—Tannic acid . . . . 3 grains.
Precipitated sulphur . . 30 "
Vaseline . . . . 5 drachms.

During the day the diseased area is not covered, but at night he applies an emolient ointment, consisting either of salicylated vaseline or vaseline alone. Care should be taken that no application containing lead be applied to the face during this treatment, else the sulphur will cause the formation of sulphide of lead and blacken the skin. In other cases the following prescription will be found wonderfully effective:

℞.—Tannic acid . . . . 75 grains.
Precipitated sulphur . . 2½ drachms.
Oxide of zinc, Starch } of each . . 4 "
Vaseline . . . . 1½ ounces.

This ointment should be applied morning and night, and the treatment should be completed by epilation.

An Emulsion for Tapeworm.—*La Semaine Médicale* gives the following prescription of LA MERE for the treatment of tapeworm:

℞.—Extract of male fern . . 1½ drachms.
Calomel . . . . . 7 grains.
Distilled water, Syrup of gum arabic } of each ½ ounce.
Powdered gum arabic, a sufficient quantity to make an emulsion.

Before this mixture is administered it should be well shaken, and the patient should be directed on the day previous to its use to subsist entirely upon a milk diet. It is stated that the worm will be expelled in from thirty to forty minutes after the administration of this medicament, if these directions are carefully followed. In children aged from six to twelve years, one-half this quantity should be given.

Creolin in Infantile Diarrhœa.—According to *La Semaine Médicale*, SCHWING recommends the following mixture for infants who are suffering from diarrhœa:

℞.—Creolin . . . . 1 to 3 drops.
Cinnamon water . . . 2½ ounces.
Syrup . . . . . ½ ounce.

Mix, and administer a coffee-spoonful every two or three hours. For older children, the following may be employed:

℞.—Creolin . . . . . 15 grains.
Sugar . . . . . 75 "

Mix, and divide into from five to ten powders, and administer from one to two powders each day.

Ligature of the Saphena Vein in Cases of Varicose Veins.—TRENDELENBURG (*Beiträge z. klin. Chirurgie*) advocates double ligature and division of the large saphenus vein in the treatment of varicosities of the trunk and branches of this vessel. He points out that the most dilated portions of the affected vein are below, and not, as generally supposed, above the valves. The walls of the vessel, being weaker here, yield more readily to the pressure of the blood when the valves cease to act. He also thinks that most of the blood which fills the dilated trunk and branches of a varicose saphenus vein is derived from above, and that but a small part comes from the capillaries of the foot and leg. It is this free downward pressure of blood along large and dilated vessels deprived of valves that causes the profuse and dangerous hæmorrhages, so frequently produced by a breach of the surface of the leg in which the veins are varicose. The conclusion that the results of the condition are chiefly due to the fact that the varicose branches of the great saphenus, in consequence of associated dilatation of the trunk of this vessel, are no longer separated from the cava by valves, has led Trendelenburg to treat varicosity by permanently obstructing the saphena at one point, in order to prevent the descent of the blood from the abdomen. The author refers to a series of cases in which good results followed the application of two cat-

gut ligatures near the saphenous opening and division of the vein between.—*British Medical Journal*, January 24, 1891.

Dangers of Vaginal Injections.—DR. ROULIN (*Journal de Médecine de Paris*) describes three cases of severe suffering from the use of vaginal injections. In one case the woman used a douche with the reservoir rather high. Immediately after the injection violent hypogastric and lumbar pain developed, followed by vertigo and vomiting. The abdomen was not sensitive to pressure. Metrorrhagia followed and lasted for two or three days, the pain ceasing within twenty-four hours. The second case was similar, except that the patient used a hand syringe and the symptoms were less severe. The third case also used a hand syringe, and while making the injection felt sudden pain in the abdomen and lumbar region, which was soon followed by rigors, but not by vomiting. The pain in this case also disappeared on the third day. In all these cases Roulin employed enemata of laudanum.

The cause of the pain is obscure, but the author believes that in his cases water may have entered the uterine sinuses, and insists that patients must be taught how to give themselves vaginal injections. The woman should lie on her back, should introduce the nozzle of the syringe for a short distance only, and must not inject the fluid with much force into the vagina.—*British Medical Journal*, January 24, 1891.

Chlorosis and its Treatment.—DR. FREDERICK SCHOLZ, of Bremen, has published a remarkable work on chlorosis, the outcome of observations made during the last twenty years. Instead of regarding the deficiency of iron or hæmoglobin or even that of the red corpuscles as the primary affection, he states that contraction of the vessels is always present in these cases, and this, he contends, is not to be regarded as a complication but as the primary condition, which is followed by the morbid changes in the blood. The vessels are, he thinks, too full and the blood abnormally serous. Long ago he was impressed by the cold and livid condition of the skin in anæmic subjects, and he was led by this to employ hot baths together with gentle friction, with the object of improving the vitality and nutrition by acting on the skin. The success of his first attempts was so marked that he has persevered in this line of treatment. Hot baths diminish the plethora by relaxing the tension of the vascular system, which is high, quickening the circulation, and thus relieving the palpitation, dyspnœa, and other symptoms. In thirty cases with great distress Dr. Scholz has gone a step further and supplemented the hot baths by venesection. Paradoxical as this method of treatment may appear, it was followed by marked benefit, and, if the foregoing theory of the pathology of chlorosis be correct, there can be little doubt that the course pursued by Dr. Scholz is justifiable.—*Lancet*, January 24, 1891.

Operative Treatment of Diaphragmatic Hernia.—POSTEURPSKI operates in cases of traumatic hernia through the diaphragm, by forming a flap on one side of the base of the chest, resecting one or two ribs, opening the pleural cavity and suturing the rent in the diaphragm after replacing the escaped abdominal viscera. The flap is then united, no drainage being required. Six cases have been successfully treated by this method in the hospital of Rome.—*Lancet*, January 24, 1891.

Artificial Teeth Impacted in the Larynx for Twenty-two Months.—At the recent meeting of the British Laryngological and Rhinological Association, Mr. LENNOX BROWNE reported the case of a woman in whom a plate of four artificial incisor teeth was impacted in the larynx for twenty-two months. Laryngological examinations had been made by two other physicians who thought that the trouble was due either to tuberculosis or cancer of the larynx. Mr. Browne extracted the plate by a pair of rectangular forceps, the patient being partly under the influence of chloroform. After the operation it was learned that the woman was an epileptic, and that she had awakened one morning with vomiting and dyspnœa which persisted for thirty-six hours. When she recovered from this attack her teeth could not be found, and it was assumed that they had fallen into the vomited matter and been thrown away. Up to the time of Mr. Browne's examinations it had not occurred to any one that the cause of the dyspnœa was a foreign body.—*Journal of Laryngology and Rhinology*, January, 1891.

Mouth-wash for Stomatitis.—DAVID uses the following mixture as a tonic and antiseptic mouth-wash:

℞.—Thymol	. . . . .	7 grains.
Borax	. . . . .	15 "
Water	. . . . .	1½ ounces.

A few drops of this are to be placed in a wineglassful of warm water, and the mouth rinsed with it. In cases in which the breath is fœtid, owing to deposits about the tonsils and gums, the following wash is said to be serviceable:

℞.—Borate of sodium	. . .	15 grains.
Alcohol	. . . . .	½ drachm.
Water	. . . . .	1 pint.
Thymol	. . . . .	7 grains.

Application for Toothache.—BARDET is said to recommend the following prescription for application to cavities in painful teeth:

℞.—Iodoform	. . . . .	½ ounce.
Oil of peppermint	. . .	5 drops.
Oil of bitter orange	. . .	1 drop.
Oil of lemon	. . . .	2 drops.
Tincture of benzoin	. .	1 drop.

Or, the following may be employed:

℞.—Chloroform	. . . .	2 drachms.
Naphthaline	. . . .	10 grains.

To be applied to the cavity on a small piece of cotton.

Treatment of Furuncle.—*L'Union Médicale* recommends for the treatment of furuncles washing the region which is affected with a 1-to-40 solution of carbolic acid, or, what is equally effective, with a 1-to-500 solution of bichloride of mercury. After this is done, carbolized oil may be placed over the part, and, finally, a powder composed of equal parts of iodoform and oxide of zinc. This treatment frequently causes resolution and prevents maturation of the boil.

Current Literature.

SATURDAY, FEBRUARY 21, 1891.

RESECTION OF THE WRIST-JOINT.

Dr. E. Hoffmann reports a resection of the wrist-joint with dorsal transverse incision. The case was one of extensive caries with nearly complete loss of the functions of the hand and fingers. Langenbeck's radial and Lister's ulnar incision were connected by a third one, corresponding to the articulation between the two rows of metacarpal bones. The two flaps were dissected upward and downward respectively, and the whole diseased focus removed *en masse*, including the carpal end of the metacarpal bones and the distal extremities of the radius and ulna. The diseased portions of the extensor tendons of the hand and fingers with their sheaths were also removed. The bones were approximated by periosteal catgut sutures and the ends of the carpal extensors sutured to the metacarpal periosteum and to the tendons of the extensors of the fingers. The wound was closed without drainage. Primary union followed.

Four weeks after the operation the hand was placed on a palmar splint, in the position of dorsal flexion, the fingers being left free for active and passive movements.

Union is good, and motion is satisfactory and gradually improving.

This method of operating is recommended in all graver forms of caries of the wrist-joint. The surgeon has ample room, removes the whole focus of disease without tearing the tissues and, therefore, obtains better and more rapid union.

The report of a number of ankle-joint resections by the method of Hueter, as modified by Helferich, is promised. The method consists in making a large dorsal flap of skin, fascia and tendons by a transverse metatarsal incision connecting the ends of two longitudinal incisions.—*Deutsche med. Wochenschrift*, December 25, 1890.

DIABETES INSIPIDUS AND ADIPOSITUS UNIVERSALIS.

Voss reports a case of diabetes insipidus with adipositus universalis in a girl seventeen years old.

The latter pathological condition developed after the diabetes had been present for three years, and was especially marked on the trunk. The external genital organs and the breasts were insufficiently developed, and there was primary amenorrhœa. Inosit was present in the urine in an average quantity of 0.6683 gramme per diem.

Antipyrine in increasing doses until 1½ drachms daily were given, affected neither the quantity nor quality of the urine.

With regard to the etiology of the affection, the evidence tends to show that disregarding the rare cases following insanity or trauma of the vagus, a primary polyuria must be assumed. This may be due to pathological changes in the secreting structures of the kidneys, *i. e.*, nephritis, in which case albumin is found in the urine; or to increased intravascular pressure, which in turn may be caused by abnormal propelling power or abnormal resistance in certain vascular areas. The latter condition is caused by vasomotor disturbances due to nervous impressions, as proved by Eckhard, who obtained polyuria after stimulation of the vermiform process of the cerebellum without increased intra-aortic pressure, but failed to get it after division of the splanchnics. Whether affections of the cœliac plexus have the same effect remains unsettled and doubtful.

As general causes may be mentioned, cold, insolation, intoxication (especially with diuretics), infectious diseases, scrofulosis, etc.

Any and all of these causes could be excluded in the case reported by Voss.

The development of the adipositus universalis is explained by the author in the following manner:

While the desire for food in the first four years of the disease was slight, with the development of puberty (in the fourteenth year) nature made an effort to stimulate the development of the organism, as shown by the increased desire for food; puberty, however, remaining undeveloped, the surplus food formed useless fat. At the same time the natural physiological stimulus for proper blood-formation—menstruation—being wanting, the girl became chlorotic, and thus the more predisposed to adipositus.

Regarding the action of antipyrine in diabetes insipidus, the author believes that it is most likely to do good in that form of the affection due to central nervous disease.—*Berliner klin. Wochenschrift*, January 5, 1891.

PARTURITION IN AN IRREDUCIBLY PROLAPSED UTERUS.

Faivre reports a case of parturition in a woman who had already given birth to fourteen children, and who was suffering from an irreducible uterine prolapse. The tumor protruding from the vulva was pyriform in shape, and was composed of the lower uterine segment, which was the seat of great hypertrophy and was also enormously œdematous. The lips of the os were lacerated and extensively ulcerated. The greatest circumference of the mass was thirteen and one-half inches; the distance from the clitoris to the angle formed by the union of the anterior wall of the vagina and the base of the prolapse—most of this surface being ulcerated—was five and one-half inches; from the clitoris to the os, seven and one-half inches; from the fourchette to the union of the base and posterior vaginal wall, two and three-fourths inches. When the woman came under Faivre's care she was confined to bed, the foot of the cot being elevated by three bricks placed under it, and was not permitted to raise herself. Under the influence of these measures the prolapsed mass notably diminished in volume and became less œdematous. The genu-pectoral position, assumed for varying periods of time, was found to be of no service and to give rise

to much suffering. Gestation being protracted beyond the normal limit, it was decided to interfere with its further progress. The patient was anæsthetized by chloroform, Barnes's small forceps were applied, and the child was delivered by traction and expression combined. For several days after delivery the mass protruding from the vulva gradually decreased in size and the woman's condition improved. This diminution ceasing, perineorrhaphy was performed three weeks after delivery, with temporary relief. Some months later it was found necessary to perform a combined operation upon the vagina and uterus, consisting in a high amputation of the neck, a large, anterior colporrhaphy, a colpo-perineorrhaphy, and shortening of the round ligaments, which resulted in an absolute cure.

It is evident that, in this case, taking into consideration the irreducible nature of the prolapsed portion of the uterus, the contractile efforts of the uterus were exhausted upon the mass instead of acting upon the cervical canal and expelling the fœtus. A second difficulty, and one which was an insurmountable obstacle to delivery, was the resistance offered by the enormously hypertrophied and rigid cervix, upon which the already weakened muscular forces had absolutely no effect.—*Archives d' Obstétrique et de Gyncologie*, December 25, 1890.

THE OPERATIVE TREATMENT OF TRICHIASIS AND DISTICHIASIS.

OF the two principal operative methods in the treatment of distichiasis and trichiasis, that of Jaesche-Arlt and that of Snellen, RAEHLMANN prefers the former for the majority of cases. Its principal advantage lies in the fact that the apposition of the inner margin of the lid to the ocular conjunctiva is not disturbed, and the eye retains its physiological protection, while in resection of the tarsal cartilages (Snellen) the whole lid with its internal margin is lifted away from the eyeball.

Raehlmann holds that the entropium cannot be produced by the action of the central fibres of the orbicularis palpebrarum—the muscle which he, like Jacobson, considers the chief causative factor of entropium—if the conjunctival surface of the lid, and especially its margin, remain in apposition to the ocular conjunctiva.

If, therefore, after trachoma the hollows of the curved cartilages are completely filled with scar-tissue so that the inner surface of the lid fits the globe of the eye, entropium does not result, but is inevitable if softening of the cartilage and its curvature occurs.

In the latter cases Snellen's operation is indicated. Both methods are perfected by transplantation of skin or mucous membrane as originated by Thiersch.

In the course of the last six months seventy-four transplantations of this kind were performed in the author's clinic. While in former years he, as well others, had numerous failures due to shrinkage and necrosis of the transplanted flaps, in this series failure resulted in only two cases. These excellent results he attributes to the perfected technique of the operation, consisting preëminently in the preparation of the transplanted flap, and also in the exact apposition by sutures.

The margin of the lid is first split, and while the surfaces are cleansed and the hæmorrhage *completely* stopped, the flap is prepared as follows: After resecting a piece of skin and subcutaneous tissue, it is placed with the epidermal side downward on a warm porcelain plate, and all tissue is removed down to the rete Malpighii, till a yellowish-gray, pale, and nearly diaphanous surface remains.

This preparation has several advantages: First, since the remaining fibres run in the direction of the surfaces and not obliquely or vertically to them, as in the subcutaneous tissue, curling in of the edges is prevented and exact apposition facilitated; second, the elasticity of the flap is decreased and shrinkage less liable to occur; third, all hair-follicles are removed, and hence the development, after the operation, of hairs in the transplanted portion is prevented. The flap is always cut larger than the fresh surfaces on the eyelid.

Through the sides and the extremities of the flap needles are passed from the epithelial surface. The flap, with the epithelium still downward, is now transferred to a piece of linen, and while the assistant presses it into the gaping wound the stitches are inserted. As soon as the flap becomes red, usually on the third day, the stitches in the longer edge are removed, and a day later those in the corners. The operation has the further advantage that no special bandage or special attendance is needed, and many of Raehlmann's patients did not even leave their occupation.

Since the author found that flaps of mucous membrane are more liable to shrink and to be thrown off, he has used skin-flaps exclusively in canthoplasties; but transplantation of mucous membrane has several times been employed as a substitute for lost conjunctival tissue in cicatricial symblepharon.

Raehlmann obtained relatively good results by transplantation of flaps of skin and of mucous membrane in extensive retraction of the ciliary margin in order to lengthen the lid. This double transplantation is applicable to cases in which, according to Klarer, the anterior margin with ciliæ has been removed and later a contraction has taken place—and to a still greater extent it is indicated in xerosis of the mucous membrane. — *Deutsche medicinische Wochenschrift*, January 1, 1891.

THE ARTICULAR AND PERI-ARTICULAR COMPLICATIONS OF DIPHTHERIA.

DR. M. B. LYONNET thoroughly reviews the subject of articular and peri-articular disorders consecutive to diphtheria. These complications he has found are very rare, and he declares that, in the language of Trosseau, "diphtheria does not like the articulations." Although the complications are rare, cases are on record in which serious involvement of the joints in an inflammatory process greatly prolonged convalescence from diphtheria. It is evident that this arthritis is quite distinct from acute articular rheumatism.

The production of the arthritis may be explained in three ways:

1. In certain cases it may be due to the simple localization of the pathogenic germ upon the articular serous membranes. It is caused, in short, by a generalization of the primary microbic infection, as in the experimental arthritis produced by Max Schuller, and more recently by Babinsky and Charrin (*Société de biologie*, July 27, 1889, and *Société anatomique*, July, 1889), in rabbits suffering from pyogenic diseases.

2. In other cases it may not be charged directly to the microbes, but rather to their soluble products, which have been well studied by Gaspard, Panum, Bergmann, and others. It is in these cases that examination of the effused fluids does not reveal the infectious agents.

3. The complications may be due to other microbes than those of the primary affection, which, finding an avenue of entrance, proliferate in the synovial fluid. These are the secondary infections now well investigated (Roger, *Gazette des hôpitaux*, 1890), and which, according to Charrin (*Les infections secondaires, Journal de pharm. et de chimie*, 1889), result in a penetration into the organism of "a second microbe, which adds its influence to that of the first."

The latter and most recent theory explains how erysipelas, due to the streptococcus of Fehleisen, can, for example, complicate typhoid fever, due to the bacillus of Eberth.

Ordinarily the effusion into the joints remains serous, but it may become purulent. The affection shows a predilection for the knee-joints, probably because these articulations are more exposed to external influence, more constantly used, and have a much larger lymphatic circulation. Still, it may be said, that the true cause of the predilection is unknown. In these articular affections the prognosis is usually good, but recovery is often slow. In some cases the salicylates have been successful.

Dr. Lyonnet draws the following general conclusions from the facts which he has investigated:

1. The articular complications of diphtheria are very rare, but we cannot deny their existence, since undoubted cases have been reported (Pauli, Bokaï, Eichorst, Henoch, and Dauriac).

2. These complications are usually due to secondary infection. They are, then, acute or subacute inflammations, ordinarily serous, sometimes purulent. They appear, either in the course of, or oftener, during convalescence from, diphtheria.

3. Together with these arthrites there exist periarticular trophic disturbances due to a nervous lesion. There is hyperplasia of the tissues of the region occurring after multiple symptoms of poisoning of the nervous system, and a long time after the beginning of the sickness.—*Lyon Médical*, January 4 and 11, 1891.

REVIEWS.

TWELVE LECTURES ON THE STRUCTURE OF THE CENTRAL NERVOUS SYSTEM, FOR PHYSICIANS AND STUDENTS. By DR. LUDWIG EDINGER. Second revised edition. Illustrated. Translated by W. H. Vittum, M.D. Edited by C. Eugene Riggs, M.D. F. A. Davis, 1890.

To all students, and to most physicians, the study of the anatomy of the higher nervous system, particularly in relation to its various functions, is most difficult, chiefly because so many names are applied to the same thing as to produce much confusion. If one turns to a work on physiology he may, perhaps, find one or two illustrations which will aid him in his studies, but on the next page he will find others which hopelessly confuse him, and perhaps, lead him to wrong conclusions.

Edinger's lectures, published in book form, probably give the best series of both crude and diagrammatic illustrations that have yet been placed before the profession, and the text which accompanies them, having felt the touch of Dr. Eugene Riggs, of St. Paul, is sufficiently clear to aid the reader in acquiring the meaning of the various German words with which the cuts are largely dotted. The marking of the various tracts and other portions of the nervous system with the terms which are used by our German colleagues is certainly a mistake in a book in which the text is English, and necessitates a small vocabulary being attached to each picture. In other instances figures occur, which in the original probably referred to sentences in the text, but which have no reference in the American edition. With the exception of these faults, we have nothing to say except in praise, and we congratulate Dr. Riggs and Dr. Vittum upon their valuable contribution of German literature to the library of American physicians.

AN ILLUSTRATED ENCYCLOPÆDIC MEDICAL DICTIONARY: BEING A DICTIONARY OF THE TECHNICAL TERMS USED BY WRITERS ON MEDICINE AND THE COLLATERAL SCIENCES, IN THE LATIN, ENGLISH, FRENCH, AND GERMAN LANGUAGES. By FRANK P. FOSTER, M.D., with the Collaboration of Eleven other Physicians. Vol. II. D. Appleton & Co., 1890.

THE second volume of this enormous work has just appeared, and presents all the features which caused both praise and blame to be attached to Volume I. The praise should, in this instance, be directed to the editor and his assistants, who have compiled so far the most exhaustive of dictionaries; while the blame, if it is proper to use such a word, is deserved by reason of the unwieldy manner in which the material is presented to the reader. This fault is, nevertheless, a necessary one in a reference book so complete in every detail.

A special characteristic is the lucidity of the definitions, which are not only clear, but sufficiently complete to really give one some information. This is the chief fault of several of the dictionaries, both large and small, which have appeared of late, for in many instances they are so cross-referenced as to be of little real service. Another advantage is the close resemblance of Foster's Dictionary to Webster or Worcester in respect to the methods employed in giving the pronunciation and etymology of words, while these standard works are

surpassed by the insertion of all words used in the discussion of medicine, botany, or their allied sciences. Hundreds of words in our own tongue startle the reader at the thought that he has not heard of such terms before, and every page presents a mine of wealth to its fortunate possessor. The illustrations are particularly well executed, and the publishers' work cannot be surpassed.

With this brief notice of one of the most stupendous tasks which medical men have ever set themselves to complete, the reader must be satisfied. To criticise the volume would be both beyond our ability and a work of supererogation; and if the eagle eye of some devotee of etymology can discover in the mass of information food for just criticism, his task is but an ungracious carping which will be buried in the splendor of a great literary achievement.

The thoroughness of the work prevents its rapid appearance before the purchaser, and has caused rival firms to state, with some show of fact, that the volumes would never be completed. This unfortunate occurrence will not take place, but we hope that the rest of the dictionary will be more rapidly finished. The second volume includes from "Cac" to "Fasay," and is made up of 1544 double-column pages.

A LABORATORY MANUAL OF CHEMISTRY, MEDICAL AND PHARMACEUTICAL. By OSCAR OLDBERG, PH.D., and JOHN H. LONG, SC.D. Illustrated; second edition, revised and enlarged. Chicago: W. T. Keener, 1891.

THE title of this work of 459 pages indicates exactly what will be found between its covers, for it is only of value to the physician who is interested in making tests in a private laboratory, or to the student of medicine and of pharmacy, who is taking a course in chemistry. The book is copiously illustrated for the purpose of showing how various pieces of apparatus are to be employed, and contains, among other things, tables showing the approximate solubilities of a large number of drugs both in alcohol or water. Lists of apparatus which will be needed by everyone who is about to fit up a laboratory for private use are given, and a long list of re-agents and test solutions is also inserted. The type is large and the paper is good, while the reputation of the authors assures the purchaser that he will obtain a useful guide. The only thing that we find to object to is the employment of such ancient terms, as "aqua regia" and "oil of vitriol," which have long since passed out general use with scientific men.

NEWS ITEMS.

Health of New York State in 1890.—The New York State Board of Health has prepared its mortality sheet for 1890, giving the totals by eight districts, by months, and by certain principal causes. The deaths numbered 116,830, in an estimated population of 6,000,000, which, with certain corrections for non-reported mortality in some rural sections of the State, makes a death-rate of 19.6 per 1000. The mortality in the first half-year was greatly exaggerated by epidemic influenza, from which cause alone it is estimated that 5000 deaths took place. Many deaths from this disease were certified to under the head of acute respiratory causes, so that this group has had to be credited with a mortality of 18,000, which is abnormally high in comparison with the corresponding totals of recent years. Smallpox caused only four deaths, while scarlet fever showed a decline of about 30 per cent. Diphtheria also showed a moderate decline, while measles was marked by an increase. From consumption there were 13,800 deaths, a smaller proportionate mortality than has been reported during the past five years. Cancer caused 2868, old age 5484 deaths.

Mortality in Chicago.—The report of the Chicago Health Department for the last year shows that during 1890 there were 21,856 deaths, making a percentage based upon a population of 1,200,000, of 18.21 per one thousand. Of the deaths 9.95 per thousand were in children under five years of age, and seven in persons older than one hundred years. *La grippe* directly caused 112 deaths, but pneumonia and other complications with the influenza swelled the number of victims of this class of diseases. Pneumonia carried off 2073; consumption, 1972; bronchitis, 1189; typhoid fever, 1008; scarlet fever, 193; malarial fever, 121; whooping-cough, 201; murder, 77; suicide, 206; delirium tremens, 114; and hydrophobia, 2. The total number of deaths from tubercular diseases was 2231.

Railway Surgeons.—It is only ten years since the first organization of the surgeons of railroads was attempted in the formation of an association of the medical officers of the Wabash railway. This example was slowly followed along the great lines of traffic until it became possible to form the large and influential National Association. This voluntary union has resulted not only in an improved status of the surgeons themselves, but also in an increased efficiency of the medical service along the lines. The importance of this branch of the railway service seems to be fitly recognized in the establishment of a department devoted to railway surgery n the *Railway Age* of Chicago, under the able supervision of Dr. Harvey Reed, of Mansfield, Ohio.

Warren Triennial Prize.—The Warren Triennial Prize was founded by the late Dr. J. Mason Warren in memory of his father, and his will provides that the accumulated interest of the fund shall be awarded every three years to the best dissertation, considered worthy of a premium, on some subject in pathology, surgery, or pathological anatomy; the arbitrators being the Physicians and Surgeons of the Massachusets General Hospital.

The subject for competition for the year 1892 is on some special subject in physiology, surgery or pathology.

Dissertations must be legibly written, and must be suitably bound so as to be easily handled. The name of the writer must be enclosed in a sealed envelope, on which must be written a motto corresponding with one on the accompanying dissertation.

Any clue given by the dissertation, or any action on the part of the writer which reveals his name before the award of the prize, will disqualify him from receiving the same.

The amount of the prize for the year 1892 will be $500.

In case no dissertation is considered sufficiently meritorious, no award will be made.

A high value will be placed on original work.

An Army Medical Board will be in session in New York City, N. Y., during April, 1891, for the examination of candidates for appointment in the Medical Corps of the United States Army, to fill existing vacancies.

Persons desiring to present themselves for examination by the Board will make application to the Secretary of War, before April 1, 1891, for the necessary invitation, stating the date and place of birth, the place and State of permanent residence, the fact of American citizenship, the name of the medical college from whence they were graduated, and a record of service in hospital, if any, from the authorities thereof. The application should be accompanied by certificates based on personal knowledge, from at least two physicians of repute, as to professional standing, character, and moral habits. The candidate must be between twenty-one and twenty-eight years of age, and a graduate from a regular medical college, as evidence of which, his diploma must be submitted to the Board.

Further information regarding the examinations may be obtained by addressing the Surgeon General U. S. Army, Washington, D. C.

C. SUTHERLAND,
Surgeon General U. S. Army.

The following is the general plan of the examination:

I. The physical examination will be rigid; and each candidate will, in addition, be required to certify "that he labors under no mental or physical infirmity, or disability of any kind, which can in any way interfere with the most efficient discharge of any duty which may be required."

II. Oral and written examinations on subjects of preliminary education, general literature, and general science. The Board will satisfy itself by examination that each candidate possesses a thorough knowledge of the branches taught in the common schools, especially of English grammar, arithmetic, and the history and geography of the United States. Any candidate found deficient in these branches will not be examined further. The examination on general science will include chemistry and natural philosophy, and that on literature will embrace English literature, Latin, and history, ancient and modern. Candidates claiming proficiency in other branches of knowledge, such as the higher mathematics, ancient and modern languages, etc., will be examined therein, and receive due credit for their special qualifications.

III. Oral and written examination on anatomy, physiology, surgery, practice of medicine, general pathology, obstetrics and diseases of women and children, medical jurisprudence and toxicology, materia medica, therapeutics, pharmacy, and practical sanitation.

IV. Clinical examinations, medical and surgical, at a hospital, and the performance of surgical operations on the cadaver.

Due credit will be given for hospital training and practical experience in surgery, practice of medicine, and obstetrics.

The Board is authorized to deviate from this general plan whenever necessary, in such manner as it may deem best to secure the interests of the service.

The Board reports the merits of the candidates in the several branches of the examination, and their relative merit in the whole, according to which the approved candidates receive appointments to existing vacancies, or to vacancies which may occur within two years thereafter. *At the present time there are five vacancies to be filled.*

An applicant failing in one examination may be allowed a second after one year, but not a third.

No allowance is made for the expenses of persons undergoing examination, but those who are approved and receive appointments are entitled to transportation in obeying their first order assigning them to duty.

Operative Treatment of Chronic Disease of the Uterine Appendages.—The following letter from Williams and Champneys, which appears in the *British Medical Journal* of February 7, 1891, touches upon a subject of great interest to us all, and of peculiar interest to our English cousins. The vagaries of Lawson Tait, and his utter disregard of facts when he makes statements, coupled with his indiscriminate operative tendencies, should aid very greatly in the acceptance of the views advanced by these progressive representatives of British gynecology:

"The recent discussions on the diseases of the uterine appendages at the Medical Society and elswhere have brought this subject prominently before the profession.

"Affections of the uterine appendages are nothing new; they are comprised under the name pelvic peritonitis, or perimetritis; and since the writings of Bernutz in 1860–62, it has been well known, though not until lately current, that in a large number the route and sometimes the focus of infection have been the tubes.

"A change in nomenclature has arisen, for words ending in "salpinx" have displaced the older and more general names. Yet further changes have arisen in practice in some quarters, in that these affections have become the objects of innumerable operations. Now perimetritis is probably the very commonest of all the serious diseases of women. It is also perfectly certain that the great majority of cases get quite well without any operation. We are far from denying that exceptional cases call for surgical procedures, or that cases of prolonged suppuration of the pelvis are properly treated by the application to them of ordinary surgical principles. But this wholesale resort to a mutilating operation, advocated by several speakers at these discussions, calls for serious consideration by the profession. We have both been in charge for many years of the obstetric and gynecological departments of two of the great general hospitals of London, besides private practice. During that time thousands of patients have passed through our hands, and a very large number of cases of pelvic inflammation. We have on the rarest possible occasions resorted to removal of the appendages, and never unless life seemed to be threatened, or the health had been greatly impaired for many months. We never have sent patients away after a course of Epsom salts, 'and when this drug fails have folded our hands, and expressed the deepest sympathy with the sufferer.' On the contrary, our patients have generally got well by the use of patience

on their part and on ours. If, after a long course of patient treatment, it has seemed to us imperative to operate, we have been ready to do so, and have done so in rare instances. Without patience, many women, who have had matting of the pelvic organs for months, but who have perfectly recovered and have borne children, would have had their uterine appendages removed.

"Statistics on matters of this kind are often given in a manner which does not bring out important points. For instance, in the discussion at the Medical Society, it would have been interesting to know (1) the total number of women seen during the period embraced by the table, and (2) the total number of cases of perimetritis or pelvic inflammation among them. Statistics without these facts may give information as to the chances of the operation; those indicated would give the chance of being operated upon.

"A plea for patience is to be found in the declaration of the operators that 'the full benefits of the operation are not usually felt for months or years after.' If the operator would exercise this patience before the operation, there might be the less need for its exercise by the patient after the operation. To operate after a 'couple of months' is, in our opinion, quite unjustifiable in chronic cases, or in any except those of peril to life. To remove the ovaries in cases of congenital ill-development with dysmenorrhœa and sterility and anteflexion of the uterus, is a proceeding we have never seen necessary to recommend.

"Death from disease of the appendages is of extreme rarity, but the mortality after the operation is considerable. It is inconceivable to us that this amount of operating is justifiable, and we beg to protest in the strongest manner against it.

"This particular operation has already furnished material for legal proceedings in a well-known case. It is conceivable that it might form the object of legislation. We cannot think that the good sense of the profession can fail to be roused against it. The sooner the better. There are several other questions requiring an answer, some of which have been referred to by others; for instance, What were the results in the unreported cases? What are the dates of the reported cases? What were the results in general surgery at the Waterloo Bridge Road Hospital during the time of the unreported cases? These are questions concerning the authorities of that hospital. But we prefer to keep to our point, and to repeat our protest against the removal of the appendages whenever a tumor of them is found accompanied by pain and hæmorrhage; or a dilated tube; or affections of the tubes with tender or even enlarged ovaries, after treatment has been tried for a couple of months; or when a woman suffers from pelvic pain, dysmenorrhœa, or dyspareunia, after one or more attacks of pelvic inflammation; or in cases of ill-developed ovaries with anteflexion and dysmenorrhœa; or in cases of cardiac dyspnœa; or of tubercular disease of the tubes associated with similar disease of other organs; or in neurotic women without disease of the appendages. We protest against the view that any one of the above conditions diagnosed before, or discovered during or after, an operation, is in itself a justification for the removal of the uterine appendages; and such practice is, in our opinion, highly injurious to women and to the profession. In no other department of surgery is inflammation of an organ considered to justify its removal."

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM FEBRUARY 10 TO FEBRUARY 16, 1891.

By direction of the Secretary of War, CHARLES C. BYRNE, *Lieutenant-Colonel and Surgeon*, is relieved from duty at Fort Sam Houston, Texas, and will report in person to the commanding general Department of the Columbia, for duty as Medical Director of that Department, relieving Bernard J. D. Irwin, Colonel and Surgeon. Colonel Irwin, on being relieved by Lieutenant-Colonel Byrne, will proceed, via San Francisco, California, to St. Louis, Missouri, and report in person to the commanding general Department of the Missouri, for duty as Medical Director of that Department, relieving Charles Page, Colonel and Assistant Surgeon-General. Colonel Page, on being relieved by Colonel Irwin, will report in person to the commanding general Division of the Atlantic, for duty as Medical Director of that Division.—Par. 6, *S. O. 36, A. G. O., Washington, D C.*, February 13, 1891.

By direction of the Secretary of War, LOUIS M. MAUS, *Captain and Assistant Surgeon*, is relieved from further duty at Fort Stanton, New Mexico, and will report in person to the commanding officer Whipple Barracks, Arizona Territory, for duty at that station, relieving Richard W. Johnson, Captain and Assistant Surgeon. Captain Johnson, on being relieved by Captain Maus, will report in person to the commanding officer, San Carlos, Arizona Territory, for duty at that station.—Par. 7, *S. O. 35, A. G. O., Washington, D. C.*, February 12, 1891.

JOHNSON, R. W., *Assistant Surgeon.*—Is granted leave of absence for one month, to take effect on or about February 10th, instant.—Par. 1, *S. O. 16, Department of Arizona, Los Angeles, California*, February 4, 1891.

WOLVERTON, WILLIAM D., *Major and Surgeon.*—Is granted leave of absence for one month, to take effect on or about February 15, 1891.—Par. 2, *S. O. 15, Department of the Platte, Omaha, Nebraska*, February 7, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING FEBRUARY 14, 1891.

AUZAL, E. W., *Passed Assistant Surgeon.*—Detached from the U. S. S. "Boston," and ordered to the U. S. S. "Lancaster."

CRAIG, T. C., *Passed Assistant Surgeon.*—Detached from the U. S. S. "Vesuvius," and ordered to the U. S. S. "Boston."

BRAISTED, W. C., *Assistant Surgeon.*—Detached from Hospital, Hot Springs, and ordered to the U. S S. "Vesuvius."

FITTS, H. B., *Passed Assistant Surgeon.*—Ordered to the Army and Navy Hospital, Hot Springs.

ARNOLD, W. F., *Assistant Surgeon.*—Ordered to the U. S. Receiving-ship "Vermont."

BLACKWOOD, N. J., *Assistant Surgeon.*—Detached from the U. S. S. "Vermont," and ordered to the U. S. S. "Newark."

ASHBRIDGE, RICHARD, *Passed Assistant Surgeon.*—Ordered to the Navy Yard, New York.

NORTH, J. H., *Assistant Surgeon.*—Detached from the Navy Yard, New York, and ordered to the U. S. S. "Lancaster."

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ORIGINAL ARTICLES.

INTERESTING AURAL CASES.

BY S. G. DABNEY, M.D.,

PROFESSOR OF PHYSIOLOGY AND CLINICAL LECTURER ON DISEASES OF EYE, EAR, AND THROAT IN THE HOSPITAL COLLEGE OF MEDICINE; VISITING SURGEON TO THE EYE AND EAR DEPARTMENT OF THE LOUISVILLE CITY HOSPITAL.

Fracture of the tympanic portion of the temporal bone.—According to Buck (*Diseases of the Ear*, p. 290), fractures of the temporal bone may be classified as follows: 1. Fracture or diastasis of the tympanic or squamous portion in the region of the middle ear, without implication of the pars petrosa. 2. Fracture of both the tympanic and petrous portions. As the last-named variety is, of course, much the more serious, the recognition of this distinction is of much practical importance. The following case illustrates fracture of the tympanic portion. It will be observed that the tuning-fork was heard better on the bone than in the air, that there was at no time any watery discharge from the ear, and that the hearing improved from $\frac{\text{pressure}}{\text{XL}}$ soon after the injury to about $\frac{2}{\text{XL}}$ a few weeks later. The ordinary hearing-distance for my watch is forty inches.

A. B., aged twelve years, while sliding down a banister fell, striking his left shoulder and the left side of his head against the floor. For about two hours afterward he was unconscious. There was a discharge of blood from the ear which, though slight, recurred from time to time for about a day and a half. There was no watery discharge. The patient remained in bed two days. No pain was complained of. On getting up he was somewhat dizzy, his gait was unsteady, and vision with the eye of the injured side was blurred. Hearing in the corresponding ear was greatly impaired. These symptoms, namely, deafness in the affected ear, blurred vision in the eye of that side, and unsteadiness of gait, remained when the patient visited me five days after his fall. Examination then gave the following results: Watch heard only on pressure; tuning-fork (C_2) heard louder on the mastoid than in the air in front of the ear; the membrana tympani was very red and its exact conditions concealed by this acute congestion. The vessels of the optic nerve of this side decidedly congested; vision in this eye rather less than $\frac{20}{\text{XX}}$, in the other more than $\frac{20}{\text{XX}}$. From these symptoms the opinion was expressed that there had been a fracture in the temporal bone, and that the hearing, though permanently injured, would probably undergo some improvement, and that the ocular symptoms would disappear. This prognosis seemed warranted by the tuning-fork test and by the absence of any decided evidences of inflammation. Ten days later, the blurring of vision had disappeared, the gait was again all right, and the hearing was $\frac{2}{\text{XL}}$. At this time a line could be seen running into the upper, anterior part of the drum-membrane, probably indicating the site of a rupture. The membrana tympani was still very red and the ordinary landmarks indistinct.

A case of "Ménière's disease."—Mr. B., aged fifty years, consulted me recently for deafness and "ringing" in his right ear. He gave this history: Had never had syphilis; was addicted to the rather excessive use of alcoholic stimulants, but had not been on a "spree" lately; his general health was good. Two weeks prior to his calling on me, about four o'clock in the afternoon, he suddenly—"quick as a stroke of lightning," he expressed it—became very deaf in his right ear, and was attacked with violent tinnitus aurium, together with vertigo so intense that he was unable to sit in his chair. With the help of friends he was carried to his home, a short distance away, and put to bed. A few hours later intense nausea and vomiting ensued; the deafness and tinnitus remaining unchanged, and the vertigo still so intense that he was unable to sit up. By the next morning the nausea had disappeared and the noises in the ear were better, but the vertigo remained and confined him to bed for several days. When he visited me, ten days later, the only subjective symptoms were the deafness and tinnitus. My watch (normally heard at forty inches) was not heard even on pressure. The tuning-fork, sounding loudly, could be heard neither in the air nor on the bone; placed on the forehead it was distinctly heard in the good ear, but not in the deaf one. The membrana tympani of this side was a little dull in color and the light spot small, but these conditions were also found in the opposite ear, in which the hearing was good. Inflation by Politzer's method was felt in both ears, but did not affect the hearing. Examination of nose and naso-pharynx showed a condition as healthy as is usual in this climate.

Notwithstanding a negative history as to syphilis, the "mixed treatment" was administered for some weeks, but without effect. The deafness remained, and the noises became less, but did not cease.

The prevailing opinion is that cases such as the one just related are due to a primary disease of the labyrinth; probably, in this instance a hæmorrhage—but in the absence of a post-mortem the diagno-

sis of the exact pathological condition must be largely conjectural.

Restoration of the membrana tympani, and cure of suppurative otitis of ten years' standing.—Though there is nothing novel in the symptoms or treatment of the following case, it may be of value as showing the good result often attained by simple measures carefully executed.

H. W., a pale, "flabby" boy, fifteen years old, was referred to me for disease of the left ear on September 1st. The history given by himself and his mother was that he had had a "running from the ear" since his early childhood; occasionally acute exacerbations with intense earache would occur; he had suffered from such an attack for the last ten days; poultices had been applied a great part of this time, but though the discharge was lessened, pain continued and the ear felt stopped up. My watch (normally heard forty inches) was heard only on pressure. Several polyps were seen in the auditory canal, completely filling its deeper portion. The patient was extremely nervous and unmanageable, and it was found impossible to operate without general anæsthesia. In the meantime, cod-liver oil and iron were prescribed, the poulticing forbidden, and a douche of hot water was ordered. On September 3d chloroform was given by Dr. Walter Roberts, and under its influence I removed with Blake's snare the polyps from the auditory canal. The patient visited me at my office again on September 5th. Examination now showed the membrana tympani reduced to a narrow ring at the edge, a polyp growing from the tympanic wall anteriorly and the attachments of the polyps removed from the auditory canal plainly visible. I syringed the ear with a solution of bichloride of mercury, 1 : 3000, instilled a few drops of a four per cent. solution of cocaine, and after pricking the polyp with a sharp needle, rubbed into it and into the roots of those removed from the canal, a bead of nitrate of silver, fused on the end of a probe. There was at this time profuse suppuration. This treatment was continued daily for several days. When the polyps had been destroyed, suppuration was very much diminished. From this time on, the ear was carefully syringed with the bichloride solution and powdered boric acid blown into it three times a week. The membrana tympani was being rapidly regenerated and at each visit its approach to the centre was more evident. As the suppuration disappeared, the patient was required to call at my office only once a week and the same treatment continued. By October 10th there was a complete membrana tympani with no vestige of a perforation. Hearing-distance for my watch was eight inches.

The Druidic Banchoreion.—According to the last report on medical colleges of the Illinois Board of Health, two diplomas of the Druidic Banchoreion of Buffalo, N. Y., were offered to the Board of Medical Examiners of Montana for the purpose of obtaining license to practise medicine, but were not accepted. Several diplomas of "this concern" are registered in New Jersey.

EXPERIMENTAL STUDIES IN INTESTINAL SURGERY.

BY WILLIAM E. ASHTON, M.D.,
AND
J. M. BALDY, M.D.,
OF PHILADELPHIA.

OUR object in presenting this paper on intestinal surgery is to give a description of the methods and technique of the work we have done on the lower animals, so that surgeons who are unacquainted with this most important branch of surgery, and who desire to fit themselves to meet successfully the indications which arise from intestinal injuries or disease in man, may have a guide by which they can operate. We also desire to give to the profession such practical points on the surgery of the intestines as will not only increase success in operative work, but which will, at the same time, greatly increase the rapidity of manipulation. Abdominal surgery stands alone in that success is absolutely dependent upon familiarity of detail and rapidity of work. If no shock from a prolonged operation has been sustained, the patient's chances are increased a hundredfold. Given, for example, a case of intestinal obstruction, resulting in gangrene and stercoraceous vomiting, with the patient bordering on collapse, can any surgeon hope to save his patient if he takes from one to two hours in making an artificial anus or in doing a lateral anastomosis with or without resection?

We pass at once to a description of the technique and instruments used in intestinal surgery.

Instruments.—A skilful abdominal surgeon is always known by the simplicity of his outfit and the small number of instruments that he requires. With the following armamentarium we are able to perform all the various operations on the hollow viscera: four pairs of hæmostatic forceps, a knife, a pair of scissors, needles, silk, silkworm-gut and catgut sutures, rubber ligatures and rings, and a few sponges and towels. A special pair of forceps for invagination will be found useful, but in most of our operations we used for this purpose hæmostatic forceps.

The knife, scissors, and hæmostatic forceps should be those used in general surgical operations. The invagination forceps should have long slender blades, at least an inch and a half in length. If the blades of this instrument be too short it is difficult to make the invagination.

Needles.—For the abdominal walls the long, straight, spear-pointed needles are the best. The needles used on the intestines should be long, straight, and thin; they should have as large an eye as the shaft will permit, without the needle being wider at the eye than in the shaft. Darning needles ("Sharps, No. 6") fulfil these indications better than any others that we have used.

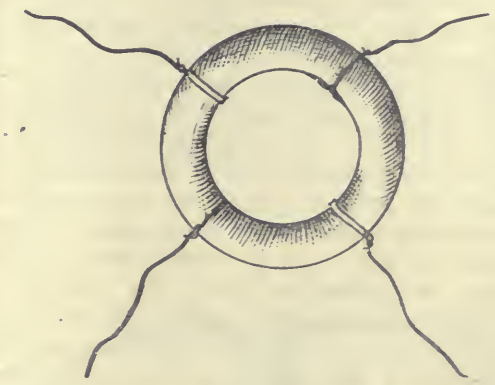
Sutures and ligatures.—For the abdominal walls we prefer silkworm-gut. In the end-to-end invagination and in the implantation of the ileum into the colon it is necessary to make use of catgut, which should be heavy enough not to break readily. For all other purposes we found pure Chinese twisted silk, No. 1, the best. This material is strong enough to stand the traction necessary in tying, it is large enough not to be lost sight of during the operation, it is sufficiently rough not to slip through the fingers while being used (as pure silk will do), and it is readily threaded into the No. 6 darning-needle. For the ligation of bleeding vessels we use the same silk.

Rubber ligatures.—It is necessary to prevent fæcal matter from invading the seat of operation during the manipulation. For this purpose many contrivances have been suggested and found useful. Nothing, however, is better than small rubber drainage-tubing, eight or ten inches in length. Ordinarily, two such ligatures are sufficient, but in an implantation of the ileum into the colon, for instance, it becomes necessary to make use of four.

Rings.—Most experimenters have been dissatisfied with the materials used for approximation rings, and have made an effort to improve upon them. We also have fallen victims to this desire, and have been using a ring which we believe has some distinct advantages. The material used is solid rubber cord, $\frac{1}{8}$ of an inch thick, and from $2\frac{1}{2}$ to 3 inches in length, according to the size of the animal to be operated on. For the human gut, which is larger than that of an ordinary dog, it is better to use a cord $\frac{3}{16}$ of an inch thick and $3\frac{1}{2}$ inches in length, or even longer if necessary. It is advisable to have rings of several sizes on hand during an operation.

In making these rings the cord is cut into either two or four segments, which are united, in the form of a circle, with catgut. The approximation ligatures, four in number, and made of Chinese silk-twist, No. 1, are tied to the catgut holding the different segments together. If the rings be made of two segments, as we usually make them, a strand of catgut is tied around the cord on either side, midway between where the sections are joined together. The approximation ligatures are fastened to them in the usual manner (see Fig. 1). These ligatures are threaded in the needles already described, and the ring is then ready for use. We claim for this ring many good points. It has a large opening, and the approximation surface is small and does not take up so much valuable room as many others do, at the same time the resulting approximation is sufficiently broad and firm. Again, these rings are solid, thus holding the parts perfectly immovable and also keeping the communication between the intestines wide open. The firmness of these rings also makes them much easier to manipulate. Further, they are easily and quickly made at a trifling cost. The catgut holding the segments of the ring together is gener-

FIG. 1.



Approximation ring ready for use.

ally found to be in good condition as late as the fifth or sixth day. We have never known it to become absorbed early enough to interfere with the success of the operation. These rings would be perfection were they only absorbable.

With the exception of Brokaw's hollow rubber rings, other rings have too broad an approximation surface. In other words, they take up too much room in the gut and give too small an opening. The same is true of Senn's bone-plates, Penrose's rubber disks, Abbe's catgut rings (which in addition are not always absorbed, as proved by Van Lennep and Shimwell), Davis's catgut mats, and Robinson's rawhide plates. Excepting Senn's plates, they all are too pliable, or at least become so soon after being placed in position. Again, with the exception of the Penrose disks, they are too difficult to make and are expensive, and for some it is impossible to obtain the material. The ligatures in Senn's plates are so complicated as to make them dangerous. The Brokaw rings more nearly approach the advantages of our own.

For end-to-end invagination or for implantation of the ileum into the colon an entirely different kind of ring is required. This ring must be small enough to be introduced into the gut and as thin as is consistent with the necessary firmness. The surface must be comparatively broad. The best material for this purpose is the larger-sized rubber bands found in the shops, which are used for holding together bundles of paper. The bands should be fully half an inch broad and about one-sixteenth of an inch thick. They can be cut into strips of the required length, according to the calibre of the gut. The ring is then made by stitching the ends together with three catgut sutures. It is well, after the ring

is finished, to turn it inside out, so that the suture-knots shall be on the inside.

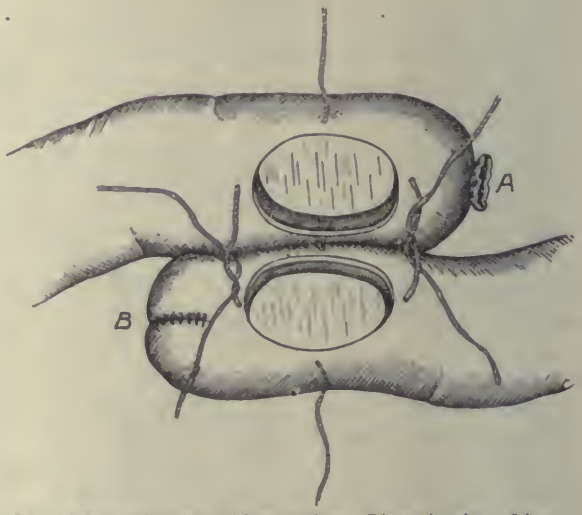
The main object in the after-treatment is to keep the patient as quiet as possible and to avoid unnecessary disturbance either with food or drugs.

In describing the operations on the hollow viscera we will go into the details of only lateral approximation of the ileum with or without resection, and of end-to-end invagination and implantation of the ileum into the colon, as all other procedures are based upon these and are simply variations. For instance, the approximations of the duodenum and stomach are performed by almost exactly the same method as an approximation of two loops of ileum. A short incision (two or three inches) is made through the abdominal wall. The parts to be operated upon are brought up through the incision and invariably so nearly fill the opening that it is unnecessary to take any other precautions to protect the peritoneal cavity from dirt; consequently, irrigation and drainage are unnecessary. During the operation the parts are frequently deluged with large quantities of warm water.

Simple lateral approximation.—A loop of the small intestine is grasped with the fingers and brought through the opening. The gut is quickly stripped between the fingers until about eight or ten inches are free from fæces. A rubber ligature is then placed at each end of the cleared space and lightly tied with a single knot. Of course, these ligatures must perforate the mesentery. This is accomplished by grasping one end of the ligature by a pair of hæmostatic forceps, carefully avoiding bloodvessels; it is then passed through the mesentery close to the gut. The incision is now made on the free surface of the gut directly opposite its mesenteric attachment, and the ring introduced. The opening is made as large as the ring will permit; it may, however, be enlarged after the sutures are introduced. As soon as the ring is in position the ligatures are passed through all the coats of the gut from within outward, the needles removed, and the ends allowed to hang loose until the other ring is in place. The end of the gut near the second rubber ligature is now treated in the same manner, and the second ring introduced. The corresponding ends of the opposite ligatures are taken up and tied together, thus completing the operation. To strengthen further the approximation a supplementary suture should in all cases be placed entirely around it, on the serous surfaces. We prefer a continuous silk suture for this purpose, as it gives a better and safer apposition, but it should include only the serous coat of the intestine. After this step is completed, the rubber ligatures are removed and the field of operation is thoroughly cleansed with warm water; the intestines are then carefully replaced in the abdomen and the abdominal wound closed. Silk sutures are used throughout this operation.

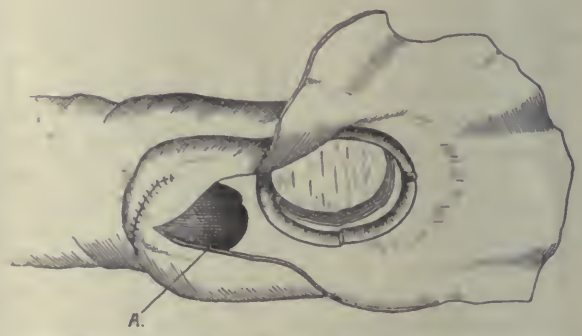
Lateral approximation with resection—In this operation the same steps are taken as in the preceding, with some additions. A larger section of gut is emptied of fæces, and, after the rubber ligatures are adjusted, as much of the intestine is resected as is desired. Care is taken to leave sufficient gut (three or four inches) beyond each rubber ligature, in order to have room to invaginate the ends and introduce the rings. When the mesentery is reached in making the resection, the mesenteric vessels should be grasped on each side by a pair of hæmostatic forceps. The incision through the mesentery is carried on each side along the line of the mesenteric vessels to a single point at the base of its attachment; it is

FIG. 2.



Lateral approximation with resection. Rings *in situ*. Ligatures ready to tie. *A*. Cut end ligated; *B*. Cut end invaginated.

FIG. 3.



Approximation completed. Section of gut opened to show ring in place. *A*. Invaginated end.

here ligated and cut away, thus removing a wedge-shaped piece.

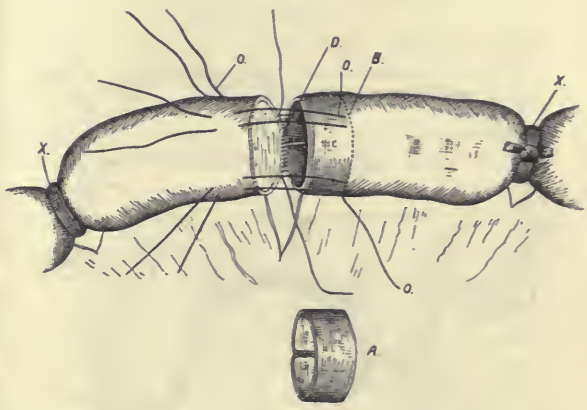
The next step is to invaginate the free ends of the intestine (Fig. 2). This is accomplished by first removing the hæmostatic forceps from one end and

then grasping the cut edge of the gut with the invagination forceps, care being taken to include at least half an inch of the bowel; the free end is now pushed into the gut, carrying the mesentery with it. A continuous suture is "whipped" over this inverted end, beginning at the mesenteric attachment and including this point; the forceps are then withdrawn. When the invagination is completed the bleeding from the mesenteric artery ceases. The second free end is treated in the same manner. From this stage the operation resolves itself into a simple lateral approximation, and is performed in exactly the same manner. Silk sutures are used throughout this operation. (Fig. 3.)

End-to-end invagination.—The first step in this operation is to make a resection. This is performed precisely as previously described. A rubber ring, of the proper size, is then introduced into the proximal end of the gut. The proximal end is found by sprinkling a few grains of common salt on the loop of intestine and watching the peristaltic wave which is excited. With a continuous catgut suture the cut edge of the bowel is stitched to the lower edge of the rubber ring. This holds the ring in place and prevents the complication of the ring slipping out or of the ends of the intestine curling.

A strong catgut suture with a needle at each end is now introduced. Each needle is carried in turn into the lumen of the gut until it reaches the upper edge of the rubber ring; it is then made to perforate the rubber, passing directly through both it and the intestinal wall. By this manœuvre both ends of the suture are brought outside of the gut. The gut-wall and upper edge of the ring are thus caught in the loop of the suture. One of the sutures is placed close to the mesenteric attachment of the gut, and the two are placed at equal distances from it and from each other. The operator now takes up two needles of the same ligature and introduces them into the distal end of the gut. The two ends of the suture should be placed side by side, and should run parallel with the long axis of the gut. They should perforate the tissues of the distal end half an inch above the cut edge, should pass through the peritoneal and muscular coats only, and should be brought out about one-fourth of an inch from their insertion. The other two double sutures are placed in a similar manner and the needles removed. That portion of the gut containing the ring is now invaginated into the distal end, the mesentery being carried with it. All the sutures are then pulled taut, but before tying them care must be taken to turn in, around the whole circumference of the intestine, the cut-edge of the distal end. A supplementary suture should be placed around the whole circumference of the invagination. For this we prefer a continuous silk suture. We have found that the operation can be more quickly and easily performed, and that it is safer if we rapidly stitch together the cut ends of the gut with a continuous suture passing completely through all the coats of the gut. This suture should be introduced just before the time of invaginating and tying the double sutures. No one has as yet brought this fact forward, and we believe that it will lessen the mortality to a great extent. The invagination is absolutely perfect, and with the final, supplementary suture there is a minimum danger of leaking. (Fig. 4.)

FIG. 4.

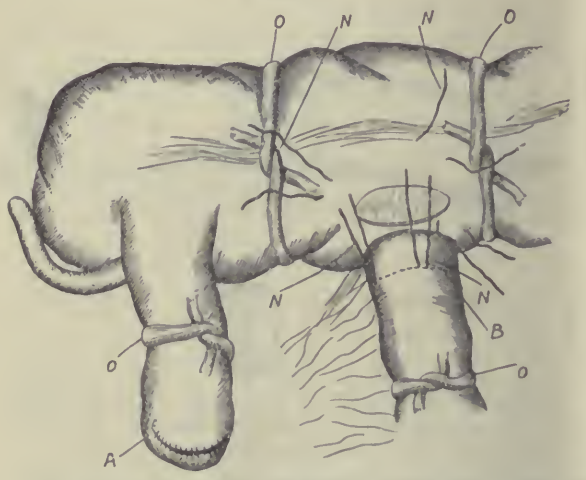


End-to-end invagination. *A.* Invagination ring; *B.* Upper end of ring when in place; *D.* Ends partly stitched; *OOO.* Ligatures in place; *XX.* Rubber bands in place.

Implantation of the ileum into the colon.—This procedure consists essentially of two operations, namely, a resection and an invagination. First, the ileum is resected in the usual manner, care being taken to invaginate only the proximal end of the severed gut. The resection should be made as close to the colon as possible, so as to leave only a shallow blind pouch. The colon is then brought into the incision and a portion (four or five inches long) immediately above the ileo-cæcal valve stripped free from fæcal matter; the fæces are held back by an extra pair of rubber ligatures, introduced and tied in exactly the same manner as described in the approximation and resection operations. A ring (similar to the one used in the end-to-end invagination) is placed in the free (distal) end of the ileum and is fastened there in the same manner as is the ring in end-to-end invagination; three sutures are also introduced as in that operation. An opening, large enough to admit the end of the ileum containing the ring, is made in the colon at a point directly opposite the attachment of the meso-colon. The sutures from the ileum are then introduced into the colon in the same manner as they are in the distal end of the ileum in the end-to-end invagination, only instead

of being passed in the long axis of the gut they are here passed so that they radiate in different directions in the transverse axis. The necessity of this arrangement of the sutures will be at once apparent when the parts are in place. The sutures being properly introduced, the ileum, carrying with it the mesentery, is invaginated into the opening in the colon. The sutures are then drawn taut and securely tied, care being taken that the cut-edges of the colon are inverted around the circumference of the opening. A supplementary continuous suture of silk should be introduced as in the other operations. (Fig. 5.)

FIG. 5.



Resection of ileum, with invagination of ileum into colon. *A* Resected and invaginated end of ileum; *B*. Upper end of invagination ring; *NNNN*. Ligatures in place; *OOOO*. Rubber bands.

We have conducted a large number of experiments on dogs during a period of some months, in order to familiarize ourselves with the technique of the operations, and to determine the safety of the several proposed operative procedures. The outcome of this experience has convinced us firmly that no one can do justice to his patients, should he be called upon to perform such operations without having previously done some experimental work, either on living animals or on the cadaver. The advantages of the living animal over the cadaver for such purposes are so obvious as to need no discussion.

In a large majority of the experiments we found that the omentum became adherent to the incision. This same condition is often found by those of us who are called upon to perform secondary operations upon the human subject. In post-mortem examinations we frequently noted that in cases in which during the operation no care had been taken to bring the omentum down, there were no omental adhesions. This was not only true as regards the incision but also the seat of the anastomosis. The question, therefore, naturally arises whether it would not be well in all cases of abdominal section to push the omentum up out of the way before closing the wound. It may be argued that if the omentum is not brought down and interposed between the incision and the intestines, the latter will become adherent instead of the omentum. This, however, has not been our experience with either the lower animals or human subjects. The peristaltic action of the gut is sufficient to explain this difference.

As to the value of omental grafts we have our doubts. It is true, as Senn and others have claimed, that in some cases in which there is danger of leakage and consequent infection, an abscess may form, and the general peritoneal cavity be protected for a time by the graft. Such has also been our experience. But at the same time it is true that, in cases in which no omental graft was used we had an occasional abscess, which was just as surely shut off from the peritoneal cavity by the contiguous folds of intestine becoming adherent about the seat of infection. In either case the abscess would probably prove eventually fatal, if not relieved by operation. The disadvantages of the graft are so plain that we would not attempt to use it in the human subject, except under peculiar circumstances. The fewer cut surfaces left in the abdominal cavity the better, as each one is a point to which some near knuckle of intestine may attach itself. This is, to our minds, one of the greatest disadvantages of abdominal surgery, and it has been most forcibly brought to our attention in this experimental work on the intestines. We have had numerous opportuties to examine the condition of the parts at varying periods of time after operation. In almost every dog which died or which was killed, we found the seat of the operation bound up in a mass of adherent omentum and intestines. Sometimes so great were these adhesions that it required very careful search to discover just which knuckles of gut contained the approximation, and a number of times, in spite of the greatest care, we separated the approximated surfaces in our efforts to discover the seat of operation. Every unnecessary raw surface tends to complicate this condition, and for this reason alone we believe omental grafts should be abandoned. Our own operations were successful without them. If the omentum is brought down and attached about the seat of operation without cutting the graft free, it makes the mass only the more complicated. Robinson and others have reported cases in which a knuckle of intestine slipped under this kind of graft and became strangulated. In these adhesions there may be a great future danger to the patient. It occurred to us that perhaps some material might be found that could be smeared about the seat of the operation and protect the parts from adhesions until the inflammatory condition abated

sufficiently to make adhesions safe. We were not successful, however, in finding anything. Van Lennep tells us that iodoform collodion, as recommended by Stern, will prevent the adhesions, but it also prevents the union of the approximated surfaces. It is to be hoped that in the near future some reliable substitute may be found. Very frequently abdomens are opened to break up adhesions and relieve pain or obstruction caused by these adhesions. Why should not some of these patients on whom we do approximation operations succumb to this condition? That such will be the outcome in a certain proportion of cases we have no doubt.

Another factor which adds to the danger of future obstruction is the small size of the communication between the intestines. This opening is, of necessity, smaller than the calibre of the gut, and for this reason alone there is danger of future trouble. As a matter of fact, the openings, as usually made, are smaller than necessary. This is the greatest fault with the Senn plate. Brokaw's and our own rings give the best chance for a free communication; there is a larger hole in the ring, and the narrow approximation surface takes up less of the much-needed room in the gut. Even with these rings we have found the resulting communications in the intestines too small. The openings have a tendency to become even smaller as healing and contraction go on. We have found in a certain number of cases large masses of fæces forming an obstruction immediately above the communication—one or two dogs dying from this cause. How, with these small openings and the masses of adherent intestines, all patients can escape future trouble from the operation itself we cannot see. Of course, we do not mean to decry the advisability of these operations. Every surgeon should be prepared and able to do them. In cases in which they are advisable it is, as a rule, a matter of life and death to the patient. If we saved a life for only a few weeks or months, the operation would be well worth the doing. We desire only to call attention to possible future dangers, with a view to discerning some way of preventing them.

There has been some discussion amongst operators as to the best method of bringing the two loops of gut together after resection. We have found it immaterial whether the ends of the gut be brought together side by side in the direct line of its long axis, or whether the two ends be folded on themselves. In either case the mesentery may be stitched together by a few extra sutures, if the operator prefers. It is probably safer to insert these extra sutures and thus avoid all danger of a knuckle of intestine slipping between two folds of mesentery. In case this accident should happen, there would be danger of subsequent obstruction. However, unless the hernia occurred within the first few hours after operation, adhesion would have taken place between the two mesenteric folds, and thus obviated the danger.

When a resection and a lateral anastomosis have been made, there may be several causes of trouble in the subsequent progress of the case, referable to the blind pouches left by the invagination of the free ends. In one of our cases the invaginated end was so long as to hang down over the communication between the intestines, and this acting as a ball-valve, caused death by obstruction. In other cases the *cul-de-sac* formed by the invagination was found filled with hardened fæces. Both these difficulties may be avoided by invaginating only a small portion of the gut, and then making the anastomosis-opening close to the end.

Together with all other operators, we have found that there is little danger of fæces accumulating in the portion of intestinal canal excluded by these operations. In all cases this portion of the gut has contracted, and has subsequently been found to be free from fæcal contents.

One of the most important lessons that our experimental work has taught us is, that the principle of *lateral approximation* should be used in every instance in which it can be applied. In itself it is a very simple and easy operation, and can generally be completed in from ten to fifteen minutes. In not a single case did we lose a dog on which we had performed a lateral approximation of two loops of the small intestine, with or without resection, except when we experimented with the cut ends after resection. Such has been to a great extent the experience of all operators. The principle of lateral approximation may be carried out almost *ad infinitum*. If two sections of the small intestine are to be joined, a lateral approximation should be made; if the small intestine and the stomach are to be brought together, the union should be by lateral approximation; if the small and large intestine are the parts to be dealt with, still a lateral approximation is the operation of choice: indeed, this method should be practised if any of the other hollow viscera are to be united. So thoroughly are we convinced of the greater safety of this operation over any of the other methods, that with our present experience we would not dare to attempt an end-to-end approximation or an invagination on the human subject in cases in which we had the choice. Our mortality from the end-to-end approximation after resection amounted to more than 30 per cent. Brokaw, in his experiments, had a mortality of 50 per cent., and other experimenters have shown no better results, whatever method was employed. The mortality of the implantation of the ileum into the colon after resection of the ileum just above the ileo-cæcal valve was better. Our first two or three operations of this kind ended fatally, because we used a faulty method,

and there was leakage. After we had learned how to do the operation properly, our mortality did not rise much above 10 per cent. Other surgeons have done better than this. Shimwell claims that all his operations of this kind terminated favorably. He is the only one, however, who has been so successful. The operation involves much greater handling of the parts, and it takes about twice as long a time to complete. In addition to this, it is a comparatively difficult operation to perform, and we have found it an unsafe one, even after long experience and with the greatest care. On the other hand, where we resected the ileum at the ileo-cæcal valve, and then made a lateral approximation to the colon higher up, we had uniform success, excepting in one or two instances, in which death was due to other influences. Shimwell found ileo-colostomy a very fatal operation, and believed it to be due to the tenesmic action of the colon. His ligatures broke in seven of these cases, all of which died. It is much more probable that he did not properly repair the damage done by the break (of this accident we will have more to say later) than that the operation was at fault. The mesocolon is long enough to permit sufficient peristaltic action without putting any strain on the approximated surfaces; at any rate, not more than occurs in the case of the approximation of the small intestine. In every case the colon must be brought out of the incision to make the approximation. If, therefore, it has sufficient freedom for this, it is free enough not to be subsequently injured by a little peristaltic action. When the colon can be easily brought into the wound (and if it cannot, the operation is practically impossible), the lateral approximation can be made as safely between colon and ileum, as between two loops of the ileum itself. Senn reported to the American Surgical Society at Washington two cases of lateral approximation of the colon and ileum done on the human subject, one of the cases making a good recovery.

In cases of lateral approximation with resection, it is necessary before approximating the two loops of gut, to deal with the open ends. The method adopted by all surgeons heretofore has been to invaginate the free ends and close them with a continuous suture. This detail occupies some time and the operation can be materially shortened if a more expeditious way were found of dealing with them. It occurred to us that a simple ligation of the end of the gut might answer the purpose, and this was tried in a number of cases (see Fig. 2, A). After a ligature was thrown around the intestine as near the cut edge as possible, the exposed mucous membrane was quickly scraped away with the handle of the scalpel, and the ends were freely washed with water, and dropped. This proved successful in a large proportion of cases—about 60 per cent. In the dogs which died, it was found that either quite a large end had been left, or the mucous membrane had not been scraped away with sufficient care. In all these cases there was a localized abscess about the stump, and in several a general peritonitis. As the matter now stands it would be an extremely unsafe procedure on the human subject. However, something may come of it in the future, and it is well worth the attention of experimenters. The stump is tied and dropped in this manner in cases of pyosalpinx and of diseased appendix vermiformis: Why not in the intestine itself? We would suggest that the ligature be applied, the stump carefully scraped free of mucous membrane (which can be readily done), the ends of the stump trimmed close to the ligature and a sponge saturated in an antiseptic solution held over it for a moment. It seems to us from our results that the method promises safety. Wherever there is sufficient material to invaginate, we would not think of attempting the ligation method, but cases may arise in which there is no tissue to lose and in such, if the latter can be done safely, it may prove invaluable. The point is well worth considering, and we hope to report further upon it.

The danger of breaking one of the approximation ligatures or of having it loosen during the manipulation, has been dwelt upon by several writers. Shimwell broke a ligature in eight different operations and lost seven of the animals. He asks, "What is the remedy?" and answers, "The only thing that can be done is to remove the portion of the ileum operated upon and to insert a new ring into the colon, being careful to pass the sutures well beyond the former sites." In our own work we broke a ligature three times, and in one case two of the four ligatures broke on account of a badly-prepared ring, and yet all the dogs made good recoveries. Lembert sutures were substituted at the points of break, care being taken to introduce them beyond the puncture of the broken ligature. We are at a loss to account for the bad results in Shimwell's operations, unless they were due to the rings. He used the Brokaw or rubber-tube ring, while we used our own solid rubber-cord ring. Our rings are so firm and do their work so well that after they are in place and two or three ligatures tied, the approximation is almost completed, and needs but little additional support. As we have proven in our work, it matters not if one of the ligatures breaks; the accident can be easily and quickly repaired by the insertion of a Lembert suture.

As to the necessity or even advisability of scarification, we decidedly take exception to the views advanced by other operators. The disadvantages and dangers of this detail in technique are, it seems to us, serious and its advantages *nil*. An uninjured

peritoneal surface will successfully resist infection, while one in which the solution of continuity has been broken will succumb. Consequently, if we scarify the peritoneal investment of the gut immediately around the openings, there is greater danger of infection, especially as that portion of this surface, not directly pressed upon by the rings, is practically free in the intestinal canal. This free scarified portion will, of necessity, become infected, and in case the approximation is weak at any point, even though it be not weak enough to allow of actual leakage into the peritoneal cavity, yet the adjacent scarified and approximated surfaces will be infected. In consequence of this, abscesses form between the approximated surfaces, and even on the sides of the approximation in the peritoneal cavity. Or, if the whole surface be infected, when the rings fall away, it will be found that union is weak or has not occurred. We have found these conditions in several cases in which scarification was used, but never when the approximation was made without it. Again, the bleeding almost always incident to the scarification considerably embarrasses the subsequent handling of the sutures and the completion of the final steps of the operation. If there were any advantages in the scarification these risks would be justified, but there are none. In no instance did an approximation fail where we did not scarify. The rings always remain in place for from four days to a week, and by that time the union of the unscarified peritoneal surfaces is sufficiently firm to resist any pressure likely to be brought to bear on them from within.

TREATMENT OF BLADDER DIFFICULTIES IN OLD MEN.[1]

BY JAMES A. JACKSON, M.D.,
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THE general surgeon may profitably arrange the numerous subjects within his province into groups, classified in conformity with pathological, physiological, or anatomical relations.

Affections of the bladder are no exception, but should be considered from a standpoint which views the genito-urinary system as a whole, beginning with the meatus and ending with the kidneys, having always an eye to the interdependence and functional and structural relations between the various parts during health, as well as to their mutual influences when diseased. Anything, however, like an exposition of the pathology, diagnosis, and treatment of all the abnormal conditions of the bladder, or even of the diseases of this organ in old men, would far exceed the limits of such an article as this, it being my purpose merely to make a few suggestions which I hope will be of use in the management of these cases.

The proper action of the urinary system requires a normal condition of all its parts. If any one part be deranged, congenitally or by acquisition, the effect may sooner or later be felt throughout. The kidneys must be sound in function and structure, the pelves and ureters free and unobstructed; the bladder must be adequate as a convenient receptacle, with intact sphincter and detrusor muscles permitting periodical evacuations in a healthy manner; the prostate gland must be devoid of inflammation or hypertrophy, the circular muscles of the deep urethra exempt from spasm, and the calibre of the urethra, from meatus to bladder, must be up to the normal standard, and free from stricture.

It should be remembered that, although the pathological or mechanical conditions leading thereto may be numerous and varied, the end is practically the same—retention of urine, which unrelieved is followed by a typhoid, comatose state, terminating in death from "septo-uræmia," the result of absorption of ptomaïnes and non-elimination of urea. Hence, it is to the postponement or prevention of this final stage that all our efforts should be directed. Many patients have had more or less trouble for some time before applying for treatment, frequent and difficult micturition being the usual complaint, and assistance is not infrequently deferred until retention results, and the case has become complicated by consecutive pathological states of these organs.

Our ability to diagnose the exact condition will depend upon our familiarity with the numerous abnormal states of the urinary apparatus, and our skill in physical exploration; and it is equally true that our success in treatment will be in proportion to our recognition of the true causes, together with a judicious application of the most appropriate remedies.

We all have been taught to regard the prostate gland as answerable for most of these evils in old men, but if many preëxisting conditions had been earlier detected and properly treated, this gland would have escaped so much notoriety. This organ may, indeed, be the seat of the main difficulty, even though unrevealed by rectal examination. Therefore, we should not be satisfied with an investigation of this part only, but thoroughly inquire as to the condition of all parts of the genito-urinary tract.

Whenever, then, an old man complains of frequency or difficulty in micturition, or that he has to get up during the night to pass his urine, subject him to a careful examination to learn the cause of his trouble, be this a phimosis, small meatus, diminished size of the urethral canal, impacted calculus,

[1] Read before the Central Wisconsin Medical Society.

enlarged prostate gland, a diseased state of the bladder, a tumor or stone therein, or whatever else may be the probable or possible origin of the disturbance; and regard his kidneys as being in a more than doubtful condition; also do not forget that frequent micturition is often due to the overflow of a greatly-distended bladder.

Many of these cases have now begun their "catheter life," during which, unless otherwise relieved, the urine must be withdrawn once or more daily. Consider these people as always in a precarious state, for aside from risk of sudden retention, their kidneys may, at any moment, become badly deranged. These organs may suffer sudden congestion by reason of reflex influences, as in the so-called "urinary" or "catheter" fever; a nephritis, if already present, may become acute, or this disease may now for the first time appear; or, lastly, the renal organs are sooner or later liable to that form of suppurative inflammation from extension of septic processes from below upward known as "surgical kidney"; which name, rightly interpreted, means that the lower urinary tract has too often failed to receive the proper surgical treatment.

Look well to the patients' hygiene. Impress upon them the belief that their lease of life and freedom from complications will be proportionate to the care they exercise in regard to their daily habits of life. Avoidance of exposure during inclement weather is imperatively demanded; the labor of the kidneys is lessened when the skin is warm, but if unduly chilled, renal congestion and inflammation are very probable consequences, and for this reason the clothing should be sufficient to guard the surface from sudden or prolonged cold. The amount of exercise should be carefully regulated, overwork followed by fatigue with diminution of heat should be avoided, as it is apt to throw an additional burden upon the kidneys.

Keep the bowels regular, using, if need be, some gentle laxative, for a loaded lower bowel tends to congestion of the pelvic viscera, adds to the obstruction, and may cause hæmorrhage from the prostatic venous plexus.

Excesses in eating, and especially the over-use of malt or spirituous beverages, are to be forbidden, because they lead to indigestion, and load the urine with irritating substances, thus intensifying any existing disease, and not infrequently cause sudden retention.

The general health should be maintained, and remedies that give tone to the vesical muscles are often indicated; atony and paralysis of these parts are not seldom the starting-point of the trouble, and they always aggravate any other associated disease. The balsamic and stimulating diuretics and such remedies as disinfect and improve the urinary passages are often valuable. The patients must be instructed to evacuate the bladder with punctilious regularity at the very onset of any symptom signalizing future danger, provided this act can be accomplished in a natural way, and the organ completely emptied. Straining efforts should be checked as far as possible, and urination rendered easier by a squatting or other advantageous posture, the residue being expelled by gentle pressure upon the perineum with the hand. So soon as micturition *per vias naturales* also ceases satisfactorily to fulfil its purpose, the aid of the catheter must be called in.

When the case assumes a certain gravity, with urination at night, chronic cystitis, decomposing and residual urine, atony of the walls, and a depressed *bas fond*, the patient should be instructed in the introduction of an aseptic soft catheter. Indeed, the sooner the patient is taught how to evacuate the bladder in the evening by this method the better, for left to itself the disease progresses and dilatation and sacculation, with destruction of mucous membrane, follow as the forerunners of retention and intra-renal pressure, which are but too often the beginning of the end.

The instruments used by the patient should be selected by the surgeon, and time is well spent in teaching him how to keep his hands, catheter, foreskin, and meatus perfectly clean and free from septic matter. All filthy lubricants should be discarded in favor of carbolized or iodoformized fluid vaseline.

Unless the patient receives timely aid of a curative character, or unless his disease prove not to be amenable thereto, the time finally arrives when we are called upon to alleviate the pains and dangers of a distended bladder. In our laudable desire to feel the satisfaction of having skilfully evacuated this organ, we should not forget that there are some important indications in addition to the mechanical relief afforded by catheterization. Watch closely the condition of the kidneys, and remember that no matter how brilliant one artistic manipulation of the catheter may be, the interests of the patient will be far better subserved by the prevention of evil beyond the reach of surgical art.

Antiseptic precautions are as requisite in this condition as they are elsewhere. When aseptic conditions already exist, antiseptics may seem out of place, and in many cases of sudden retention from hypertrophied prostate or spasm of the urethra, the bladder is comparatively free from disease, and contains an acid urine devoid of pathogenic microbes. Often we cannot be sure as to this, and it is far safer to adopt the antiseptic system in all cases.

This holds with still greater force whenever there is an accidental exposure of raw surface by means of any kind of instrument. Therefore, in order to avoid repetition, I would urge the necessity of

always making use of this method whenever we perform any kind of operation on these cases, from the simple introduction of an aseptic catheter to the perfect antiseptic technique of a suprapubic or perineal cystotomy. By so doing we not only save the patient from the dangers incident to septic invasion of these organs, but prevent the still greater one of suppurative nephritis. We should endeavor to prevent by all possible means the occurrence of any reflex irritation due to the passage of instruments, which irritation would cause chills, fever, and prostration in proportion to the renal disturbance. Never pass the catheter with the patient standing or in a cold room. Put him in a warm bed, give a dose of quinine or Dover's powder, or bromide with a hot drink, and, if convenient, a warm bath. This, or similar treatment, equalizes the circulation and lessens reflex excitability. Either a hard or a soft catheter may be used.

The cautious use of cocaine ought perhaps here to be considered, but if an anæsthetic be necessary or advisable, I would generally prefer pure chloroform carefully given as being the safer agent under these circumstances. Obviate the risk of congestion and hæmorrhage due to sudden relief of pressure, by withdrawing at first very slowly only part of the bladder contents, gradually increasing the quantity removed at each subsequent evacuation until the organ can be safely emptied. It is well to replace part of the withdrawn urine by the careful injection of a solution of one of the safe antiseptic agents, like boric acid. This liquid will also serve to flush the urethra, and later on for daily irrigation of the bladder when cystitis is present or probable.

If, after fairly-well conducted efforts with the catheter, failure to reach the bladder ensues, it is wise to abstain from further fruitless attempts, and rather than inflict additional injury, to resort to one of the other means for emptying the viscus, the simplest and best of which is suprapubic aspiration, and which, properly done, is quite safe and may be repeated a few times with the hope that the relief so obtained will result in restoration of natural micturition, or, at least, in admission, *per urethram*, of the catheter. Should, however, these hopes not be realized, and the urine be foul and purulent, with chronic cystitis a marked feature, even this measure should yield to one more effective in establishing drainage, permitting irrigation, and affording physiological rest to the parts. We can then choose either suprapubic or rectal puncture with a curved trocar, leaving the canula *in situ*. Harrison's method of "tunnelling the prostate," or Cock's operation of perineal puncture with a bistoury, either of these would meet with my approval.

Did time permit we would also discuss the indications for perineal cystotomy at a period when the urethra is yet permeable by a grooved sound, which operation in properly-selected cases, by affording rest and drainage to a distressed bladder, is capable of putting a stop to the disease.

AN EPIDEMIC OF TINEA TRICHOPHYTINA CRURIS.

BY HENRY W. STELWAGON, M.D.,

AND

B. FRANKLIN STAHL, M.D.,

OF PHILADELPHIA.

TINEA trichophytina cruris—tinea cruris, eczema marginatum, ringworm of the thighs—as met with in this country, may be briefly described as an eczema-like eruption, with a sharply-defined, red, elevated, sometimes papulo-vesicular or vesico-pustular border, involving the cruro-genital folds, the inner surfaces of the thighs and contiguous sides of the scrotum, and at times extending downward several inches, exceptionally invading the pubic and lower abdominal surface, and, in rare instances, the axillæ. The severe type of the disease, involving the greater part of the thighs, lower abdomen, scrotum, anal folds, inner portions of the buttocks, with marked thickening and infiltration persistently rebellious to treatment, is, fortunately, rarely met with outside of certain countries. The cases here to be referred to presented in their clinical symptoms, nothing unusual beyond their acuteness and epidemic character; in some respects the area of disease was, comparatively speaking, somewhat limited, but this was doubtless due to the short duration and to the fact that therapeutic measures were early adopted.

This epidemic occurred, two or three years ago, in the Philadelphia Hospital, chiefly among the resident medical staff, but later in its course involving several officials and two or three of the nurses of the training-school. It was first noted in one of the resident physicians in July, and for six or seven weeks was limited to this patient. From this time on, however, its spread among his *confrères* was rapid, and before the disease had disappeared eighteen of the staff, several of the other officials, and several nurses had been attacked. Those of light complexion exhibited the more pronounced types of the disease, and the two out of twenty resident physicians who escaped were brunettes. So far as could be learned, in not more than two of the nurses was the cruro-genital region affected, but in two or three others several ringworm patches developed on other parts. As remarked, in most of the cases the surface involved was not large, but in a few instances the disease extended several inches down the thighs. Moreover, in a few cases, the axillæ were, primarily or secondarily, invaded; and

in several of the subjects also, one or two typical ringworm patches presented at other points of the general surface, for instance on the face, feet, and limbs. In almost all of the cases, and in all of the patches, the degree of inflammatory action, although superficial with inconsiderable thickening or infiltration, was unusually severe from the beginning, precluding, as experience showed, the use of the stronger applications commonly employed in the treatment of this affection.

The cases came under our conjoint observation and care after the epidemic was well established. Several of the resident physicians had prescribed for themselves strong remedies with the hope of aborting or rapidly curing the disease, but with scarcely an exception, with the result of aggravating the symptoms and bringing about a painful, eczematous inflammation. With this fact brought to our notice it was thought, under the circumstances, advisable to use one of the milder parasiticides, and a lotion of sodium hyposulphite, a drachm to the ounce, was, therefore, prescribed. In cases just recovering from the effects of too strong applications, a carbolized boric-acid lotion, containing a few minims of glycerin and alcohol to the ounce, was employed at first, this subsequently giving place to the wash of sodium hyposulphite. Under the continuous employment of the latter remedy, the disease was gradually brought under control and in the course of several weeks—by the middle of November—was completely relieved. In all, the disease had attacked about twenty-five persons, and this within a space of several weeks. Later there was a slight recurrence in one or two of the patients, which, however, rapidly disappeared under a resumption of treatment. In the whole hospital, including officials, physicians, nurses, and inmates, excepting possibly two or three cases which, upon an average, were always present in the institution, no other cases and no tendency to its spread were to be noted.

The main interest of this group of cases naturally hinges upon their source and the method of contagion. The epidemic itself had, we believe, in all probability, its origin in the case of the first resident physician attacked, and who, it will be remembered, remained the sole one affected for almost two months. In his case the disease was doubtless contracted in some accidental manner, for it could scarcely be accepted that this case and those subsequently affected had a common origin, inasmuch as the others were not attacked for some weeks later, and then almost simultaneously. The method and means of its spread may have been thus: The soiled linen of the resident staff was washed in the laundry of the institution at the same time and in the same machines, and it seems probable that in this manner the spores and mycelium of the trichophyton from this first case, as soon as the fungus had developed in sufficient quantity to be an active source of contagion, found their way to the others. The linen of the other house officials and nurses attacked was washed in the same machines in which that of the physicians had been laundried, but on different days, and naturally the contagious elements remaining over in the machines, if present at all, would be in scant quantity; this fact would, we think, explain why so comparatively few of these officials, and probably only those especially susceptible, contracted the disease. That this is the correct explanation of this curious epidemic, however, we feel by no means certain, but after a careful and thorough examination into the facts and surroundings, it seems to be that which has the most plausible support.

ORIGINAL LECTURES.

DIGESTION, ASSIMILATION, AND OXIDATION—THEIR NORMAL AND ABNORMAL CONDITIONS IN RELATION TO HEALTH AND DISEASE.

A Series of Clinical Lectures delivered at the New York Post-Graduate Medical School and Hospital.

BY WILLIAM HENRY PORTER, M.D.,
PROFESSOR OF CLINICAL MEDICINE AND PATHOLOGY.

LECTURE III.

GENTLEMEN: To-day I show you a case of ordinary but somewhat persistent subacute rheumatism and a case of diabetes mellitus, not because they can be classed as dyspeptics, but because I believe that each of these conditions arises in a disturbance of the digestive and oxidative functions of the body. Our first patient, Mr. E., "was perfectly well" until six weeks ago, when he developed a moderately severe attack of articular rheumatism. His left wrist became swollen and painful, and its motion somewhat impaired. In his case the symptoms have been confined to this one locality, and at times have been quite severe. He has been treated in various ways but without permanent benefit. His urine is scanty, high colored, and strongly acid. He is pale and anæmic. His tongue is slightly coated, pale, flabby, and deeply indented by the teeth, indicating a poor nutritive state. His previous habits have been fairly good, but he has lived largely upon a vegetable diet, and has been much exposed to wet and cold.

This case is interesting, not so much for its intensity, as for its persistence, and clearly illustrates the necessity of a prolonged course of constitutional treatment to improve the general nutritive condition of the body, if the rheumatism is to be cured and completely eradicated from the system.

My theory in regard to rheumatism is, that it is chiefly caused by an over-indulgence in starches, sugars, and fats, more of these CHO compounds being taken into the system than can be completely oxidized, and as a

result, instead of the complete products of their oxidation—carbon dioxide and water, incomplete substances are formed, the nature of which is not accurately understood. These imperfect elements of oxidation are called antecedent products to the complete formation of lactic acid, and are taken up from the blood by the epithelial cells lining the uriniferous tubules and discharged into the urine as completely-formed lactic acid. The oxidation of the proteids or CHNOS compounds is also imperfectly effected, which gives rise to the presence of uric acid and urates in the urine.

The chief disturbances, however, are in the metabolic changes of the starches, sugars, and fats. The incomplete oxidation and imperfect nutrition, and the increased work thrown upon the kidneys furnish the true explanation of the renal disturbances or Bright's disease, frequently associated with or occurring as sequelæ to rheumatic attacks. The physiological abnormality that produces the one is a potent factor in exciting the other, the degree and intensity of the attack determining the result obtained. This supra-acidity of the urine has given rise to the common expression of over-acidity of the system and blood, a convenient but inaccurate way of speaking. Over-acidity of the system is impossible, for lactic acid cannot exist and circulate in the blood, although we can have a decrease in the normal alkalinity of all the fluids of the body as the result of imperfect oxidation. The antecedent products of lactic acid are assumed to be in the blood and to act on the dense or white fibrillated connective-tissue structures of the body and by their presence to excite an excessive determination of blood to these structures, giving rise to the symptoms commonly known as rheumatic. The lesion produced may be a simple engorgement of the blood-vessels of the part causing pressure-effects, and secondarily the painful symptoms; or changes truly inflammatory in character may be developed which cause the local and constitutional manifestations. In the former condition the constitutional symptoms are slight, but in the latter they are often well marked, thus enabling us to differentiate between the two conditions.

In subacute cases like that of the patient before us, in the muscular forms, and in the mild attacks of the acute variety of rheumatism, I am inclined to believe that inflammation in its strict limitations does not enter into the pathological conditions, but that the rheumatic poison causes a marked and often prolonged afflux of blood to the part, followed by severe pressure-effects and a hyperæsthetic condition of the nerves, and in this way the painful symptoms are developed and maintained. If the engorgement is prolonged a supra-nutritive condition is produced, new tissue is formed, and permanent structural changes are induced until finally the condition known as chronic rheumatism, and without inflammation, is developed.

That the rheumatic infection is a general and constitutional poison, and in all cases acts locally rather than through the central nervous system, is clearly proved by its capriciousness, often developing suddenly in a joint- or intermuscular septum, remaining for a few hours or days in all its intensity and then disappearing almost as quickly as it appeared. The first attack may be the only one, but more frequently it reappears either in the locality first affected or in some more remote part of the body. This rapid appearance and disappearance is in opposition to a true inflammatory lesion, but indicates a congestive lesion, which can be quickly produced and as speedily dispersed. The results of treatment also point toward a congestive condition rather than an inflammatory lesion, as the only class of drugs which seem to give positive relief are the alkalies and those which depress the heart's action and lower the general blood-tension. For the acute rheumatic attacks nothing relieves so quickly and effectually as free mercurial purgation followed by salicylic acid or the salicylate of sodium. I prefer the following formula:

℞.—Salicylic acid . . . 3 drachms.
Sodium bicarbonate . . 2 . "
Elixir of gaultheria . . 1 ounce.
Glycerin . . . . ½ "
Water sufficient to make . 4 ounces.—M.

Dose, one fluidrachm every hour.

The salicylates should be given hourly until their full effects are produced, then the interval between the doses should be lengthened from two to three or more hours, as may be required.

By closely following the rules of diet and treatment about to be given in connection with digestive disturbances in general, these recurring attacks of rheumatism can be prevented and the rheumatic habit completely eradicated. Success in this line may require more patience and persistence than falls to the lot of the mass of humanity, but it can be accomplished if desired.

Our second case, Mr. W. A. S., aged forty-two years, a cigarmaker, "was well" until six years ago. From boyhood up to the time that he became noticeably sick he was in the habit of eating very heartily, in fact, as he states it, "enough for two or three ordinary persons." About six years ago he commenced to suffer from dull aching pain in the lumbar region, swelling of the feet and legs, epistaxis and marked cephalalgia. He also had some cough associated with pain in the chest. His mouth and throat have been and are now very dry, and he has great thirst. Early in his disease the quantity of urine that he passed was small, but during the last five years it has been abnormally large. At the present time he is passing from seventy to eighty ounces of urine daily. The urine is strongly acid, lemon-yellow in color, has a specific gravity of 1030, and contains a large quantity of glucose and some albumin. The urea is decreased in quantity, while the uric acid is increased. There are marked periosteal tenderness and perceptible emaciation. He also complains of dyspnœa, anorexia, troublesome itching over the whole body, and marked constipation. Physical examination of the chest reveals the evidences of a moderate amount of chronic interstitial pneumonia, and a weak and feebly-acting heart. This is clearly a long standing case of diabetes mellitus.

My theory in regard to diabetes mellitus is that it is chiefly due to over-feeding, as is well illustrated in our patient. In fact all persons, from a physiological standpoint, are gormandizers, some to a greater extent than others. Some can stand the strain better and longer than others, because their inherent vitality is greater. Those who reach the maximum degree of over-feeding are especially liable to develop the uric-acid, the gouty, or diabetic condition, especially the latter.

TABLE I.

POSSIBLE PRODUCTS OF OXIDATION OF THE PROTEIDS OR **CHNOS** COMPOUNDS.

	Proteids +	*Amt. of O. Used* =	*Urea* +	*Uric Acid* +	*Kreatinine* +	*Glucose* +	*Carbon Dioxide* +	*Water* +	*Sulphuric Acid.*
1. Highest oxidation	$C_{72}H_{112}N_{18}O_{22}S$. +	154 O =	$9(CH_4N_2O)$	.....	.....	.....	$63(CO_2)$ +	$37(H_2O)$ +	H_2SO_4
2. Supra- "		152 O =	$7(CH_4N_2O)$ +	$(C_5H_4N_4O_3)$	.....	.....	$60(CO_2)$ +	$39(H_2O)$ +	H_2SO_4
3. Normal "		139 O =	$4(CH_4N_2O)$ +	$(C_5H_4N_4O_3)$ +	$2(C_4H_7N_3O)$	.....	$55(CO_2)$ +	$38(H_2O)$ +	H_2SO_4.
4 Sub- "		136 O =	$2(CH_4N_2O)$ +	$2(C_5H_4N_4O_3)$ +	$2(C_4H_7N_3O)$	.....	$52(CO_2)$ +	$40(H_2O)$ +	H_2SO_4.
5. Lowest "		76 O =	$2(CH_4N_2O)$ +	$2(C_5H_4N_4O_3)$ +	$2(C_4H_7N_3O)$ +	$5(C_6H_{12}O_6)$ +	$22(CO_2)$ +	$16(H_2O)$ +	H_2SO_4.

The foregoing table, which has been worked out in this connection, shows at a glance how incomplete oxidation of the proteids will yield either the uric-acid or diabetic condition. You also see by reference to the following table (Table II.) how much more oxygen is required to oxidize one molecule of starch, sugar, or fat than is demanded to satisfy one of a proteid nature.

TABLE II.

PRODUCTS OF OXIDATION OF THE **CHO** FOOD STUFFS.

Starch,	$C_6H_{10}O_5$	+ 12 O =	$6(CO_2)$	$5(H_2O)$.
Sugar,	$C_6H_{12}O_6$	+ 12 O =	$6(CO_2)$	$6(H_2O)$.
Palmitin,	$C_{51}H_{98}O_6$	+ 140 O =	$51(CO_2)$	$44(H_2O)$.
Olein,	$C_{57}H_{104}O_6$	+ 160 O =	$57(CO_2)$	$52(H_2O)$.
Stearin,	$C_{57}H_{110}O_6$	+ 163 O =	$57(CO_2)$	$55(H_2O)$
Total,	$C_{177}H_{334}O_{29}$	+ 487 O =	$177(CO_2)$	$16.(H_2O)$.

Thus we see that if we eat twice as much as can be oxygenated in the blood, and especially if the CHO compounds predominate, general body-oxidation must be imperfectly performed. As the starch, sugar, and fats are more easily oxidized, and require such a large amount of oxygen, they act as the chief factors in preventing the complete oxidation of the proteid compounds. After this supra-feeding and incomplete oxidation have been continued for a certain length of time the protoplasmic vitality of the hepatic cells is affected, and, as a necessary sequence, the bile-secreting and excreting powers of the liver are still more decreased, in fact, all the functions of the liver are seriously deteriorated. The digestive functions become more positively disturbed, oxidation perceptibly affected, and the emaciation progressive and marked. The work imposed upon the kidneys is now greatly increased and their nutrition impaired, and, as a result, the renal cells, like the hepatic, undergo marked swelling and granular metamorphosis, and constitute, with the primary degeneration of the hepatic cells, the only constant and uniform lesion in diabetes mellitus. The sequel of this imperfect action on the part of the liver and oxygenating function of the system is the development of an abnormally large number of incomplete products of tissue-waste. These finally reach the kidneys and are excreted with the urine, chiefly as crystalline uric acid, glucose or albumin. Sometimes only one of these products will be found in the urine, at other times all three will be noted in the same sample, as is the case in our patient of to-day. The milder forms of disturbed oxidation[1] will result in the formation of uric acid only, more severe cases[2] develop in addition glucose. Others may have also derived albumin[1] and various by-products, all resulting from the incomplete oxidation of the proteids.

Viewed in this light the best food for a diabetic patient is a well-regulated mixed diet, which is limited in quantity and relatively small in the CHO elements. To prohibit the latter completely, as was at one time customary, does more harm than good. Let the quality of food be good, the quantity small, oxidation as nearly complete as possible, and then nutrition will be raised to the highest attainable standard, and protoplasmic vitality improved or completely restored. If this result is obtained the diseased condition, theoretically speaking, ought to be entirely eradicated from the system. The principal reason why this is not more frequently accomplished practically, is because the glandular epithelium throughout the body has become so much deteriorated, and the vital nutritive activity is at such a low ebb before the condition is recognized and treatment instituted, that the inherent power of the system is not sufficient to repair the damage and sustain the vital functions at the same time, even though the digestion and oxidizing powers of the body are placed in the most favorable condition.

Before commencing the discussion on the treatment of cases with a disturbed digestive function, it may be well to glance for a moment at the Tables which I have here for your inspection. First, let us look at the CHO compounds (Table II.), which are the most easily oxidized. If we consider the whole group together we find that it requires 487 atoms of oxygen to satisfy one molecule of the CHO group.

TABLE III.

RESULTS OF OXIDIZING **CHO** COMPOUNDS.

Starches, sugars, and fats	yield to the body	Heat, energy, and rotundity, and act as lubricating agents,	and are excreted from the body as	Carbon dioxide and water.

We find by referring to Table III. that the oxidation of the starches, sugars, and fats yields to the system heat, energy, rotundity, and lubrication, but without the development of any tissue-nutrition, or muscular or glandular activity. The waste of oxygen, however, is not so great if we deal with the starches and sugars alone; but when the relative proportions of the CHNOS to CHO compounds in the animal and vegetable food-stuffs are considered (Table VI.) we find an enormous preponderance of the CHO elements over the proteids. Remembering how easily the CHO elements are oxidized, and

[1] Table I., line 4. [2] Table I., line 5.

[1] The Post-Graduate Journal, p. 13, January, 1891.

that the digestion and oxidation of a vegetable albumin at best is a far more difficult task than is the oxidation of an animal proteid, I think you all can readily appreciate how eating too abundantly of the vegetable food-stuffs is very apt to overtax the oxygenating capacity of the system. Having to depend as we do upon the proteids or CHNOS elements for the development of tissue, muscular and glandular activity, and some of the bodily heat and energy (Table IV.), it is absolutely essential that we should maintain perfect oxidation of the proteids if the highest nutrition is to be sustained and the greatest working-power developed.

TABLE IV.

RESULTS OF OXIDIZING **CHNOS** COMPOUNDS.

The proteids $C_{72}H_{112}N_{18}O_{22}S$ { are developed into all forms of bodily tissue } yielding { Heat, energy, muscular and glandular activity, } = and are excreted from the body as { Urea, uric acid, kreatinine, carbon dioxide, water, and sulphuric acid.

Let me refer to the following Table, which shows the relative proportions between the CHNOS and CHO compounds from a diet barely sufficient to maintain life to that demanded by forced labor.

TABLE V.

COMPARATIVE DIET TABLE.

Diet	CHNOS	CHO
Bare subsistence	100	100
Moderate exercise	180	161
Active labor	232	171
Forced work	242	189

We see that the increase in quantity is found to be greater in the case of the proteids than in the simple CHO elements, consequently the demand cannot be satisfied with a purely vegetable diet, without great danger of overtaxing the oxygenating capacity of the system and thus exciting conditions of disease. Of course, a few isolated cases can always be found of individuals who have seemed to accomplish the result upon a purely vegetable diet; but both theoretically and practically it cannot be done by the great mass of humanity. The inherent vitality of a few persons is very great and their oxygenating capacity unusually large, so much so that they seem to disprove completely the common rule. A close clinical study, however, of the habits of humanity at large, and experimental work carried out among soldiers and prison laborers, in whom the diet is accurately known and regulated, conclusively proves that there is marked deterioration of both physical and mental vitality if an exclusive vegetable diet is used. Among pure vegetarians the infant mortality is also very large and tuberculosis quite prevalent, the reverse being true if an animal or proteid diet is administered.

A mixed diet, well regulated as regards both quantity and quality, will unquestionably yield the most satisfactory results so far as perfect nutrition and working capacity of the system are concerned.

TABLE VI.

COMPARATIVE COMPOSITION OF FOOD-STUFFS.

	Water, H_2O.	Proteids, CHNOS	Starch, Sugar, and Cellulose, CHO.	Fat, CHO.	Salts.
Milk { Human	88.91	3 46	4.62	3 48	0.21
Milk { Cow's	86.23	3.73	4 93	4 50	0.6
Eggs	65.0	18 2	.....	15.3	1.0
Beef	77.5	16.0	.....	5 0	1 5
Beans	9 9	25.5	60 6	2.8	3 2
Peas	9 9	20.2	63.9	2.0	3.0
Bread	34 9	7 0	56.7	1.3	1.0
Potatoes	74.0	2.5	22.1	0 10	2 30
Wheat	.....	18 0	67 40	2 10	2 50
Rye	.....	12.5	79.55	2.25	2 60
Barley	.....	12.96	81 15	2.76	3.10
Oats	.....	14.39	66.90	5.50	3 25
Corn	.....	12 50	77 41	8 80	1.25
Rice	.....	7.55	90 75	0.80	0 90

In the foregoing table of food-stuffs we find that milk, the first food of the infant, contains a large percentage of CHO elements, but as the period of lactation progresses these CHO compounds gradually decrease. This large percentage of CHO elements is unquestionably intended to yield heat and energy to the growing tissues of the child, until they have developed sufficient vitality and inherent activity to be a source of heat and energy to themselves. Then, with the development of the teeth and the almost incessant motion of the growing infant, milk does not seem to be sufficient to satisfy the nutritive demands of the system, and eggs, meat, and the more highly nutritious foods are demanded if the highest physical and mental powers are to be developed. Too frequently, however, the CHO elements are increased at the expense of the CHNOS compounds; fat, soft, and plump babies are developed, false habits of feeding engendered, nutritive vitality is sapped, and a foundation laid for the entrance into the system of all kinds of disease, especially the tubercular infection. The proteid-fed baby is never very fat, but its limbs and muscles are plump and firm and its resisting power against disease is at the highest standard, in fact, it is not likely to contract disease of any kind, even if brought in contact tact with those of an infectious or contagious nature.

Taking this view of the subject, together with a clinical, careful, and personal study of hundreds of cases, I have come to the conclusion that imperfect diet, digestion, oxidation, and assimilation are the source of a large percentage of our chronic diseases. They are the foundation, as it were, in the development of all disease-processes, both acute and chronic. To be successful in the treatment of disease we must thoroughly understand this subject and apply our medicinal agents, not so much with a view to relieving the symptoms presented, but toward correcting the abnormal physiological conditions which are producing pathological processes. So soon as we are able to interpret the incipient manifestations correctly, we can at once go back to the primary source of the trouble, anticipate symptoms and effect cures before the more serious changes have had time to develop.

What I am about to say in connection with the so-called dyspeptic affections, applies with equal force to all disease-processes. Over-feeding, both in health and in disease, has, without doubt, been the cause of many an untimely death; and there is now a growing tendency to feed less and to oxidize what is taken more completely, Knowing that over-feeding causes incomplete oxidation and malnutrition, and that it is the potent cause of the intestinal and hepatic character of disease, we are placed in a position to treat these maladies rationally.

Having already found by our study of the physiological process of digestion, that the major part of the work is accomplished in the intestines and by the liver, we can easily rule out the stomach as being primarily at fault in a large majority of the cases presented for treatment.

From these observations, it is reasonable to suppose that in but few cases are dyspeptic symptoms to be interpreted as originating in the stomach, although, generally speaking, they have been so regarded and treated, with an almost universal history of failure so far as satisfactory and permanent relief is concerned. If we carefully analyze those cases that present symptoms directly referable to the stomach, we find, as well illustrated by our patient of last week and by hundreds of other cases that have come to this clinic for treatment, that behind them all, there is more or less intestinal and hepatic derangement, which must be removed before a perfect and permanent cure can be effected.

When the stomach is primarily and chiefly at fault, the diagnostic symptoms are marked discomfort and pain while taking food or immediately afterward, followed quickly by the belching up of acid or alkaline gases or fluids, associated with or followed by vomiting. So soon as the stomach is emptied, relief is afforded. Certain kinds of food-stuffs will aggravate this condition, while others will be well borne.

When the disturbance is intestinal and hepatic in character, there is no distress or pain at the time of taking food, and the stomach seems to tolerate all varieties of food equally well. But after the meal, the abdomen commences to swell, the clothing feels too tight, and tympanites and boborygmi are developed to a marked degree, the latter often keeping the patient awake at night. With the abdominal distention there is often uneasiness or even acute pain in the *scrobiculus cordis*, which may be so great as to cause nausea, vomiting, and faintness, or lead to the suspicion of the existence of malignant disease of the stomach, or of an aneurism of the abdominal aorta. This symptom is due to the transverse colon being abnormally distended and wedged upward and backward between the stomach and the vertebral column, which causes the solar plexus to be more or less severely compressed. Over-distention of the stomach without general tympanites, as a rule, does not compress the solar plexus and cause pain, whereas over-distention of the colon almost invariably does. After the distress and pain have lasted for a number of hours, the patient obtains relief by belching up the gas which has been accumulating in the large intestine—this accumulated gas having been forced back into the small intestine and stomach by the peristaltic action being reversed — or the gas may be passed *per anum*. The latter is the exception, for these cases are usually obstinately constipated. The intestinal and hepatic cases usually have a dirty, muddy-looking skin, and are chronically semi-jaundiced. They pass scanty, high-colored, dense and acid urine, which often contains a large quantity of uric acid, urates and oxalates, and an abnormally small quantity of urea. The headache, vertigo, and various vague and neurasthenic symptoms indicate a condition involving the intestinal and hepatic functions rather than the stomach alone.

By a close study of a large number of these cases, I have beeome firmly convinced that a pure and simple stomach dyspepsia is exceedingly rare, if not almost an impossibility, while the hepatic and intestinal cases are daily seen by every practitioner. Treatment directed to the stomach relieves only temporarily at best, while attention to the intestines and liver will cure the most severe and confirmed dyspeptic.

In the class of gastric cases in which there is a hypersecretion of gastric juice or of its acid, the acute symptoms can be relieved by administering bicarbonate of sodium after each meal; this quickly neutralizes the over-acidity and tends to improve temporarily the general condition. Or the hypersecretion can be arrested by giving an acid before meals, which tends to decrease the secretion from the gastric membrane. Nitro-hydrochloric acid is the best form of acid to administer, as it improves the functional derangement of the liver, which is often a predisposing cause of the gastric symptoms. If we assume, however, that this gastric acid dyspepsia is due to a deficiency in the primary flow of the acid gastric juice and that the supra-acid condition is to be attributed to the lactic-acid ferment decomposing the saccharine elements and thus producing the acidity, then a different line of treatment must be instituted. If the bicarbonate of sodium is given for temporary relief, it tends to neutralize completely the acidity of the gastric juice and destroys gastric digestion, throwing the entire work upon the intestinal tract; in fact, all the alkalies seem to do but little good. The nitro-hydrochloric acid here again holds the first place among our list of remedial agents, but it should be administered after the meal with a view to converting the albumin in the stomach into syntonin, thus favoring the digestion of the proteids by the pepsin present. This together with the favorable influence of the acid upon the hepatic functions will improve the nutritive functions in general, and finally restore the gastric secreting membrane to a normal condition. These physiological differences must be recognized and appreciated if the most effective line of treatment is to be instituted.

The alkaline form of gastric dyspepsia is usually due to a deficiency of the primary flow of the gastric secretion, and is secondary to fermentative changes. This condition, like the former, can be both temporarily and permanently relieved by the administration of nitro-hydrochloric acid after meals. To give these cases pepsin, bismuth, and a host of other drugs, is simply a waste of time for the patient and ultimately discreditable to the physician.

This brings us to the most interesting part of our subject, namely, the management of intestinal and hepatic indigestion with general physiological impairment of all the functions of the body. The treatment of this

somewhat complex subject is best divided into two parts, the dietetic and medicinal.

Assuming that the condition of disease is due to overfeeding and incomplete oxidation, the first step is to remove the cause by cutting down the amount of food taken and to improve oxidation by exercise in the open air. My rule is, at first, to cut off as nearly as possible, all the CHO food-stuffs, and place the patient upon an almost exclusive proteid or CHNOS diet. This is best accomplished by limiting the food to from four to six ounces of skimmed milk or buttermilk every two or three hours, as may be required to satisfy the demands of hunger or faintness, or by an exclusive diet of matzoön.[1] In this way the CHO compounds are, to a large extent, excluded from the system, and all the oxygenating capacity of the body is brought to bear upon the proteid or CHNOS compounds or the truly nutritive elements. As a result of this line of action, oxidation of the proteids is forced up to a higher point than the normal standard, and the highest nutritive and reparative action is developed with the least expenditure of vital force. The amount of effete material to be eliminated from the system by the excretory organs is largely reduced, for by this more complete oxidation we get the simplest and smallest number of excretory products and those which are easy to eliminate, namely, urea, carbon dioxide, and water.

This is clearly illustrated in our first table (Table I., line 1), which shows the possible products of oxidation of a proteid body. This plan of feeding is continued for from three to six weeks, at the end of which time an almost insatiable craving for solid food is usually developed. This, in connection with the improved condition of the urine, is an indication that the nutritive vitality of the protoplasmic elements of the body has been improved, if not absolutely restored to its normal state, and that the system can stand a more varied diet. Eggs may next be added to the milk, and finally a little stale bread, with all kinds of lean meat, including beef, mutton, and fowls, as well as fish, oysters, clams, etc. Maccaroni can be substituted for vegetables, not because it is a CHO substance, but because it is chiefly composed of the proteid elements of the grain separated from the starch and sugars. It is best cooked by first boiling for two hours or until it is soft and jelly-like, then adding a little milk and cheese and baking. In this form it is a strongly nitrogenous food, but satisfies the cravings for a vegetable. By following this line of feeding, nutritive vitality will be restored, health reëstablished and the patient finally brought back to a well-regulated and mixed diet. The excessive use of the CHO compounds, and especially potatoes, should be scrupulously avoided. I have several patients who, if they eat heartily of potatoes, will use so much of their oxygenating capacity that the proteids cannot be perfectly oxidized, and the fourth result in Table I. (line 4) is quickly made evident, by the urine being loaded with uric acid and urates within twenty-four hours after the ingestion of the potatoes.

Assuming also that there is a deficiency in the quality of the bile, either with an increased or decreased quantity, usually the latter, this condition needs early medicinal attention. First, it is wise to sweep the old bile from the system, which can be accomplished in a number of ways, such as by administration of from ten to twenty grains of calomel, alone or combined with a little jalap, or by administering fifteen or twenty grains of blue mass combined with a compound cathartic pill.

In some of the more obstinate cases the following triturate is very effective:

℞.—Bichloride of mercury Arsenious acid	} of each	1 grain.
Powdered ipecac	. . .	2 grains.
Calomel	. . . . .	15 grains.—M.

Divide into fifteen tablets of which one may be given every four hours until six or ten have been taken.

The bichloride, arsenic, and ipecac all stimulate the hepatic cells and cause them to pour forth a larger quantity of bile, and the small and often-repeated doses of calomel excite at the end of twenty-four or forty-eight hours a brisk cholagogue action. By this combined action a very large quantity of the poor and useless bile is forced out of the system and room made for a new and active supply, and bodily oxidation is greatly improved. After ridding the system of the old bile, new bile must be supplied, which is best accomplished by the use of the following formula:

℞.—Inspissated ox-gall	. . .	40 grains.
Sulphate of quinine	. . .	1 drachm.
Compound extract of colocynth	. . . .	10 to 20 grains.
Extract of taraxacum	. .	½ drachm.

Divide into twenty capsules, of which one should be taken three times daily before meals.

By giving the milk warm together with this inspissated-bile pill, the casein will be precipitated in fine feathery flakes and placed in a form to be most easily acted upon by the gastric and intestinal ferments. The bile reaching the intestinal canal helps to prevent decomposition, accelerates peristalsis, improves intestinal digestion, and hastens absorption. From the intestine some of this newly-acquired bile passes up together with the more perfectly liquefied food-stuffs to the liver, and furnishes to the hepatic cells fresh and new bile from which to manufacture a natural supply of biliary fluid. It also seems to aid the hepatic cells in their food-transforming power, as indicated by a decrease or disappearance from the urine of albumin, glucose, oxalates, uric acid and urates, with a marked rise in the percentage of urea.

Sufficient colocynth or some other cathartic agent should be added to the above-mentioned pill to insure one or two smooth well-formed passages daily; even slight looseness of the bowels is often of advantage and does not weaken the patient. The form of cathartic to be added will often have to be changed to meet the varying conditions of the system. Good judgment in the selection of the remedies to be used is absolutely essential, if the greatest success is to be attained in the management of these cases.

Associated with these conditions there is always imperfect innervation, especially of the nerves distributed to the digestive and hepatic organs, and in fact through-

[1] Prepared by Dr. Dadirrian, 213 Second Avenue, New York.

out the whole splenic arcade. This may be overcome by the following combination:

℞.—Sulphate of strychnine . . 1 grain.
Hydrochlorate of caffeine } of each 1 drachm.
Extract of damiana }
Hydrochlorate of cocaine . . 20 grains.
Extract of taraxacum . . ½ drachm.

Divide into twenty pills, of which one should be taken three times daily.

The strychnine serves as a bitter tonic and acts like an electric stimulant to the spinal centres and nerves distributed throughout the splenic arcade, thus primarily stimulating the glands which they supply to increased activity. The strychnine and caffeine stimulate the heart's action and raise the arterial tension, both of which are abnormally low, so much so as to be decided elements in preventing a perfect nutritive condition. The caffeine and damiana, especially the latter, are powerful nutritive tonics to the cerebro-spinal centres and motor nerves distributed throughout the splenic arcade. The cocaine is not added unless the pain from pressure upon the solar plexus is considerable or has been long continued and caused a persistent hyperæsthetic condition of the abdominal nerves. Hyoscyamus at times may be of service for its particular stimulating action upon the vasomotor nerves.

By scrupulously adhering to this plan of dieting, and by a judicious adjustment of the medicinal agents so as to assist nature in her defective condition, a very large percentage of these so-called chronic dyspeptics can be completely and permanently cured. The same can be said regarding Bright's disease, rheumatism, the uric-acid diathesis, diabetes, etc.

But treatment must not be stopped as soon as the patient commences to feel better; it must be continued for weeks and in some cases for months, until nature has had time to displace all the damaged protoplasmic elements and replace them with new and sound structures. When this rule is followed, the cure will be permanent, otherwise an early recurrence of the symptoms may be expected.

HOSPITAL NOTES.

WOMAN'S HOSPITAL OF PHILADELPHIA.

Service of JOHN B. ROBERTS, M.D.,
PROFESSOR OF SURGERY.

[Reported by Mary E. Allen, M.D., Demonstrator of Surgery.]

RADICAL OPERATION FOR UMBILICAL HERNIA.

A woman, forty-six years old, entered the hospital May 19, 1890, for operation upon an enormous umbilical hernia of four years' duration. Her health had been good until the appearance of the hernia, which was produced by lifting a heavy stove. Even the sudden protrusion of a part of the intestines through the abdominal rupture did not cause her to take to her bed, although she suffered from pain in the back, sides, and lower part of abdomen.

The mass increased in size, and after a time became dropsical, until the tumor reached to her knees. On May 12th, just before her admission to the hospital, the thinned walls of the hernia ruptured, and a bucketful of dropsical fluid escaped. On May 18th she had a second discharge of a smaller quantity of the same kind of fluid. The next day she entered the hospital, complaining of borborygmus, accompanied by severe pain, although she had regular movements from the bowels. She also had nausea and a very poor appetite. The urine contained oxalates and red blood-cells. Upon the tumor were found several ulcerated openings, through which the discharge had taken place.

A few days later she had some chilliness, followed by a rise of temperature, and on May 25th her temperature was 101.6°. Later she had severe pain in the tumor, and occasionally vomited a greenish material. When the sinuses leading into the hernia were dressed, there was a discharge of about three teaspoonfuls of pus.

On June 13th she was etherized for the purpose of having a radical operation performed. The tumor at this time was about one foot in length, and rather more in width. The abdominal walls were thoroughly cleansed and an incision made, just large enough to permit exploration of the sac, in the hope that reduction might be accomplished. The omentum and bowel were, however, everywhere adherent, and it was impossible to reduce the bowel without making a larger opening. The incision was made by thrusting a grooved director through one of the former openings and cutting upward upon it. Following the incision there was a free discharge of fœtid serum. A great deal of inflammatory lymph was found upon the intestine, omentum, and walls of the sac. Masses of this lymph were stripped off and removed; and, as it seemed impossible to return the congested omentum to the abdominal cavity, much of it was ligated in masses and removed. At the lower portion of the sac the lymph was in layers, increasing the thickness of the walls to half an inch. The intestines were also very much congested and friable, so that in breaking up the adhesions between them the two outer coats of the bowel were ruptured at one point for about an inch. This was at once carefully sutured with catgut. Finally, the lower margin of the hernial ring was entirely freed from adhesions, but above they were too firm to be broken up. The process of reduction was now accomplished through the lower part of the opening, which was enlarged a fourth of an inch by a hernia knife, leaving the stumps of the omentum and a portion of the colon still adherent to the upper border of the ring. The stumps of the adherent omentum made an excellent plug with which to clear the opening, and were accordingly stitched in position, after the abdominal cavity had been thoroughly irrigated with boiled water and dried with sponges. No drainage-tube was used, and no ligatures to bleeding vessels, torsion being sufficient. A large portion of the wall of the sac and skin were now cut away, including the thickened mass at the lower part of the tumor, and the walls were then securely sutured over the hernial opening. Antiseptic dressings were applied, and the patient was placed in bed in excellent condition. Her temperature was 101.2° F., and pulse 104. A mustard plaster was placed over her stomach, and she did not vomit till three o'clock on the following morning.

On June 14th, at noon, her temperature was 101.4° F., and pulse 136. Her abdomen was becoming tympanitic,

and four doses of Rochelle salt, of half an ounce each, were given at intervals of half an hour. Five grains of quinine in suppositories were also given every two hours. The administration of the Rochelle salt was followed by an enema of turpentine, egg, and water. Her bowels then moved, the stool being thin and containing shreds. In the evening assafœtida was added to the quinine suppositories. Small quantities of liquid food were given from time to time, and usually retained.

At midnight her temperature was 103.2° F., and pulse 146. She was very weak, and 20 drops of tincture of digitalis were given by the rectum.

Dr. Roberts saw the patient again at 3 A M. June 15th, when she was immediately placed upon the operating-table, the dressings removed, and the wound thoroughly cleansed with bichloride solution. The stitches were removed from the lower angle of the wound in both the skin and peritoneal opening, and a glass drainage-tube introduced into the abdominal cavity, which was then thoroughly washed out with boiled water at a temperature of 110° F. The return water contained numerous flakes of lymph slightly tinged with blood. The tube was allowed to remain for drainage, and the dressings were reapplied. The patient, however, died at 7.30 A.M.

Autopsy five hours after death. The external wound had healed by first intention, as had also the peritoneal opening, except where the drainage-tube had been introduced. The intestines had also united. There was a small quantity of lymph and serum in the abdominal cavity. The part of the intestines not included in the sac was in good condition; the remaining portion was much congested, and showed some recent adhesions between the liver and diaphragm, and between the liver and the intestines. The transverse colon, which was not seen at the time of the operation, was very much congested, being, in places, almost gangrenous. Both the large and small intestine were greatly distended. No hæmorrhage had taken place. The omental stumps were in good condition. The patient's death was evidently due to septic peritonitis.

MEDICAL PROGRESS.

The Treatment of Whooping-cough. — The following treatment, is used very largely by certain of the leading specialists in diseases of children in Paris, for the treatment of whooping-cough. The treatment is divided into three periods. The patient should remain in one room or in bed, and the physician employs belladonna and small doses of opium with aconite, as in the following prescription:

℞.—Tincture of aconite
Tincture of belladonna
Camphorated tincture of opium } of each 1 drachm.

Two to five drops once or twice a day, according to the age of the child, is the proper dose. If there is no febrile movement the amount of the aconite can be much decreased, and if constipation is present the opium should not be used. In the second period, or when vomiting comes on, ipecac may be given in small amounts to allay gastric irritation, and in the third period when convalescence is established cod-liver oil, tonics, and Fowler's solution will be found of service.

The Treatment of Eczema of the Nostrils.—COPOZI recommends the use of the following lotion in the treatment of eczema of the nostrils:

℞.—Powdered chloride of sodium
Powdered bicarbonate of sodium
Powdered borax
Powdered salicylic acid } of each 75 grains.

Mix, and dissolve a large pinch of this powder in a wineglassful of hot water and employ the solution as a wash for the eczematous patch. At night it is well to dress the part with oxide of zinc ointment in the strength of ten per cent.

Inhalations for Ozæna.—MOIRE recommends the following to be used as a fumigation in the treatment of fœtid nasal catarrh:

℞.—Camphor	1½	drachms.
Tincture of iodine	3	"
Iodide of potassium	30	grains.
Tar	3½	drachms.
Ninety-per-cent. alcohol	3	ounces.
Water	6	"

Place this solution on a water-bath and inhale the fumes for two or three minutes, after which the nasal chambers should be washed out with a spray of 1-to-100 of carbolized water.

Ointment for Hæmorrhoids.—AUDHOUI recommends, in *L'Union Médicale*, the following ointment for hæmorrhoids:

℞.—Extract of belladonna, " thebaia	of each, 15	grains.
Antipyrine	45	"
Mercury ointment	2½	drachms.
Simple cerate	1	ounce.

This is to be made into an ointment and applied to the inflamed hæmorrhoids. Rectal injections of warm water are to be employed, if constipation is present.

Toxic Symptoms produced by the Instillation of Cocaine Solution into the Cavity of the Middle Ear.—DR. FICANO, director of the dispensary for diseases of the ear in the Hospital Saint-Saverio de Palerme (*Gazetta degli Ospitali*), writes that accidents due to the absorption of cocaine by the different passages into which the drug has been introduced are not rare. Those which follow simple applications to the skin in non-toxic doses seem to be due to certain idiosyncrasies difficult to explain. Accidents of this nature following instillation into the cavity of the middle ear, are but little known, and Ficano regards the following case as worthy of special mention. A woman, aged forty-five years, had suffered for a long time from tinnitus aurium, which had become intolerable. There was a moderate dry otitis, with a diminution in the acuteness of the hearing. Treatment by insufflation of air after the method of Politzer, with instillations of a few drops of five per cent. cocaine solution into the cavity by means of a catheter, was shortly followed by vertigo, nausea, vomiting, cramps, an ineffec-

tual desire to go to stool, etc. The symptoms lasted for several hours, and closely resembled sea-sickness. When we consider the small dose employed, it is doubtful if this was a case of true poisoning, and yet all the symptoms of poisoning were present. An ischæmic action upon the mucous membrane of the ear must be admitted, together with diminution of the circulation in the labyrinth, producing a modification in the tension of the internal ear; or there was a retraction of the mucous membrane of the ear cavity, producing a compression of the labyrinth, and acting upon the oval window; or, finally, the cocaine in modifying the quantity of liquid in the internal ear, modified also the endo-labyrinthine tension. Whatever the mechanism, there was produced a want of equilibrium in the fluid of the internal ear, with grave consecutive troubles. Practitioners should take pains to become acquainted with these dangers, in order to guard against the immoderate use of cocaine. The utility of the drug is undoubted in many of these cases, but it should be employed with great prudence, and in very small doses.

Treatment of Pneumonia in Children.—In the *Revue Générale de Clinique et de Thérapeutique*, the following method pursued by ST. PHILIP is given for the treatment of pneumonia in children. For the relief of the congestion he advises that quinine shall be administered by the mouth, by the rectum, or hypodermically. If failure of respiration exists it may be well to give the sulphate of quinine in a cup of black coffee. If the circulation is in a condition of excitement and there is much fever, from one to two drops of tincture of aconite every three hours should be given, and if the bronchitis is intense syrup of ipecac should be employed. If the quinine is given hypodermically it should be prescribed as follows:

℞.—Hydrochlorate of quinine . . 30 grains.
Glycerin } of each . 2½ drachms.
Distilled water }

Twenty minims of this solution may be injected hypodermically, and it is better to warm it before doing so.

If suffocative catarrh comes on, recourse should be had to counter-irritation in the form of mustard-plasters or large blisters over the chest, or in other cases wet cups may be employed. The latter, however, are not to be used if the child is very young. If much nervous excitement is present opium should not be given, but tepid baths should be administered and antipyrine cautiously used. When the cough is troublesome inhalations of steam may be advisable. If the case becomes very serious and seems about to pass into a condition of collapse the aconite should be stopped at once and quinine and caffeine given by the mouth or hypodermically.

These drugs may be well supplemented by the use of digitalis and alcohol. Oxygen inhalations may be employed if the dyspnœa is marked, and injections of ether may be useful if sudden cardiac failure seems imminent.

Treatment of Cold Abscess.—The employment of ethereal solutions of iodoform in the treatment of cold abscesses, often causes a great deal of pain. In consequence of this BILLROTH employs the following treatment:

The abscess is thoroughly opened across its greatest diameter, and its walls are rubbed with a tampon of iodoform-gauze. After this the cavity is washed out with a solution of corrosive sublimate of the strength of 1 to 3000, and finally after the edges of the wound have been sutured a mixture composed of 100 parts of glycerin and 10 parts of iodoform is injected through a drainage-tube, and allowed to remain in contact with the diseased surfaces.

The Treatment of Chlorosis by Copper.—MM. Pecholier and Saint-Pierre concluded from experiments upon animals with the subacetate of copper, and from observations upon persons engaged in manufacturing this salt, that verdigris, if absorbed slowly and constantly, favors the production of fat, and that women employed in the manufacture of verdigris are not subject to chlorosis. LIÉGEOIS, influenced by these conclusions, has administered copper to thirty chlorotic patients with excellent results. For this purpose he employed the pills of the aceto-phosphate of copper recommended by Luton in the treatment of tuberculosis. The formula of this pill is as follows:

℞.—Neutral acetate of copper . . ⅙ grain.
Crystallized phosphate of sodium ¾ "
Liquorice powder } of each a sufficient quantity.
Glycerin }
M.—For one pill.

If the patients were suffering from amenorrhœa, menorrhagia, or leucorrhœa, Liégeois added from ¾ to 1½ grains of freshly-powdered ergot to each pill. One or two pills were given at the beginning of the midday and evening meals, preceded by from 15 to 30 drops of the tincture of nux vomica or 3 drops of the "bitters of Baumé." During or at the end of the meal a tablespoonful of the syrup of peppermint, containing diluted hydrochloric acid, was taken. This treatment was continued without interruption for from one to three months, and never produced nausea, gastralgia, or vomiting. A suitable hygiene and an appropriate diet were, of course, instituted. Under this treatment the condition of the patients improved, as shown by the color of the face and mucous membranes; the former emaciation was replaced by plumpness, and the visceral symptoms, including dyspepsia, disappeared.

As to the manner in which the copper cures chlorosis, Liégeois is of the opinion that, like the hypophosphites, the chloride of sodium, manganese, and arsenic, it stimulates the gaseous interchange between the blood and the tissues—hæmatosis—and also the functions of the digestive apparatus. The latter is shown by the increasing appetite and by a more rapid and perfect assimilation of iron.—*Revue Générale de Clinique et de Thérapeutique*, January 7, 1891.

A Mixture for Simple Colic.—DUJARDIN-BEAUMETZ it is stated recommends the following mixture in the treatment of colic.

℞.—Strong chloroform-water . 4 ounces.
Decoction of orange-flowers . 4 "
Tincture of capsicum . . 2 drachms.

A dessertspoonful of this mixture may be given every fifteen minutes until the pain is relieved.

Current Literature.

SATURDAY, FEBRUARY 28, 1891.

TREATMENT OF SIMPLE CHANCRE.

Du Castel writes that the treatment of simple chancres is essentially different from that of syphilitic chancres. While in the latter there is back of the lesion a specific poison, which will produce a general infectious disease, even though excision be practised in the first few hours after its appearance, in the simple chancre the conditions are absolutely different; no general infection follows its appearance, but local, inflammatory, suppurative, and gangrenous complications may easily arise. Instead of remaining solitary, as does the syphilitic chancre, it may multiply indefinitely. The danger of simple chancre lies, therefore, for the most part, in its virulence and in the ease with which it re-inoculates the tissues. The object of treatment, then, must be to destroy its virulence and to convert the ulcer into a simple wound. Ablation of the sore Du Castel regards as bad treatment, as there is danger of the fresh surface being inoculated in the process of removal The best mode of treatment is the use of either the actual cautery or powerful chemical caustics. In applying these, care must be taken to reach all parts of the sore, for if any part escapes destruction it will furnish a virus capable of infecting the wound made by the caustic. The use of the thermo- and galvano-cautery, and of electrolysis, as recommended by Apostoli, is attended with intense suffering, and Du Castel prefers chemical caustics.

Ricord employed the carbo-sulphuric caustic, which is composed of sulphuric acid and powdered vegetable charcoal combined in the proportions necessary to make a paste, which is applied to the chancres. This paste quickly dries and forms a sort of scab, which remains adherent to the sore for several days. When it falls off there remains a simple wound, free from virulence, which soon heals. This application, however, is attended with very severe pain.

M. Diday prefers Canquoin's paste—chloride of zinc. This is applied to the chancre, which should be well cleansed, but should not be bleeding, care being taken to cover the whole surface. Around the edge of the paste is applied a small circle of diachylon ointment, while a few drops of collodion are allowed to fall upon the surface of the paste. At the end of from one to three hours the diachylon ointment is removed and the collodion dissolved with ether. The paste is then readily detached, when the face of the eschar is found perfectly dry. If a suppurating spot remains, the cauterization has been incomplete, and the paste must be at once re-applied. The eschar formed by this method falls off on the sixth day, leaving a healthy wound which soon heals. This method is comparatively painless.

The destruction of a chancre by caustics is always a serious operation, and has a number of contra-indications. The loss of substance which it entails and the cicatrix which results render it absolutely impracticable in the treatment of a certain number of simple chancres, such as those of the meatus or of the urethra. In cases of multiple chancres, if all cannot be treated at the same time, it is better not to cauterize any of them, because of the danger of re-infection. When the chancre shows a tendency to cicatrize, caustics should not be used. Wherever, from the form or seat of the chancre, such as subpreputial chancres with phimosis, the application will be imperfect, it should not be made.

When the patient is unable to bear such active treatment, it is necessary to employ some milder method. The ferro-potassic tartrate, according to Ricord, has a specific action upon phagedænic chancres. Such ulcers should be dressed with pieces of charpie soaked in the following solution:

℞.—Ferro-potassic tartrate . . 7½ drachms.
Distilled water . . . 6½ ounces.

M. Diday recommends the employment of a solution of silver nitrate, 12½ grains to 5 drachms of distilled water. Pledgets of cotton soaked in this solution are applied to the sore three times daily.—*La Tribune Médicale*, December 25, 1890.

CAMPHORIC ACID AND THE TELLURATE OF SODIUM AS ANTISUDORIFICS.

I. In the *Bulletin Générale de Thérapeutique* of January 13, 1891, Combemale has published his clinical researches upon these two drugs. Camphoric acid, the formula of which is $C_8H_{14}(CO.OH)_2$, is made by heating camphor with ten times its weight of azotic acid. It occurs in flakes or colorless needles, which are transparent and bitter to the taste; it melts at 70°, and is slightly soluble in cold water, a little more so in boiling water, and readily so alcohol, ether, the fatty oils, and essences. Bertagnini (*Annales de chimie et pharmacie*, tom. xcvii. p. 248), experimenting with it upon himself, took by the mouth five drachms in two days without noticing any effect; he noted, however, that it could be recovered, undecomposed, from the urine. Lew (*Centralblatt für klinische Medizin*, 1890) has noted that when administered to tubercular patients subject to profuse sweats, in the large amount of half a drachm, or even one drachm in two doses, the one in the afternoon and the other in the evening, it produced an antisudorific effect, manifested some hours after absorption. The suppression, in some cases, did not occur until the next day, but occasionally the effect of a single dose persisted for several days. If, instead of giving the camphoric acid internally, an alcoholic solution was used locally, the same results were obtained. The substance never gives rise to untoward symptoms, either near or remote. Dreesmann (*Allgemeine medicinische Central-zeitung*, May 24, 1890) concludes that the drug does not act through the central nervous system, but by destroying the soluble products of the tubercle bacilli, which are the direct cause of the profuse sweats during the stage of pulmonary ulceration.

Combemale, in a series of seven observations, administered camphoric acid in doses of half a drachm daily, the whole amount being taken in a single dose at seven o'clock in the evening. From these studies he deduced the following conclusions:

1. Camphoric acid has a certain action upon the nocturnal sweats of tuberculosis; it very often causes them to cease, and is rarely without some effect.

2. These antisudorific effects are produced from the use of half a drachm per diem.

3. No disagreeable or dangerous effects, worthy of note, accompany the employment of the drug.

4. Camphoric acid acts in tuberculosis the more surely if the pulmonary lesions are not purulent.

II. Tellurate of sodium, $Na_2TeO_4 + 5H_2O$, as its name indicates, is a sodium salt of tellurium. It is obtained by heating a mixture of tellurium, or of its biniodide, with sodium, or with the azotate of sodium, or by the action of chlorine upon a tellurite in alkaline solution. It is soluble in water and alcohol, and occurs, after evaporation, in the form of a gummy mass, or as an amorphous whitish powder. The other tellurates of sodium, the acid tellurate, the white, and the yellow, are less soluble in water.

In experimenting with this drug Combemale has administered it in doses varying from one-third to three-quarters of a grain per diem, the time of administration being seven o'clock in the evening. The patients, all of whom presented the symptom of excessive sweating, were suffering from various disorders, tuberculosis, typhoid fever, acute articular rheumatism, and ulcer of the stomach. He arrived at the following conclusions from the results obtained:

1. The tellurate of sodium possesses a powerful influence over the night-sweats of phthisis.

2. These antisudorific effects are produced with certainty by doses of three-quarters of a grain per diem. Doses of from one-third to one-half grain do not give as sure or as pronounced effects.

3. After prolonged ingestion of the tellurate, some secondary troubles are apt to be produced; a garlicky odor of the breath shows itself occasionally.

4. The tellurate succeeds in all phases of pulmonary tuberculosis; but to stop the secretion of perspiration the dose should be in direct proportion to the advanced stage of the phthisis.

In comparing the relative value of the two drugs just studied, the tellurate of sodium is found to be superior in its antisudorific powers, and the most certain in its action. Combemale also decides that it is the best drug as yet introduced into the pharmacopœia for the profuse sweats of phthisis, and after this he prefers the camphoric acid. Not only do these drugs act favorably in phthisis, but in the sweatings of numerous diseases, such as rheumatism, typhoid fever, syphilitic pulmonary cavities, and dyspepsia. Their action is antiseptic in its nature, since they destroy the soluble microbic products, and thus stop the abnormal process.

THE EMPLOYMENT OF SALOL, BETOL, AND ARISTOL.

It has been well shown by Dreyfous and Hirtz that salol is a good antiseptic for the urinary passages and the intestinal tract. Recently it has been largely used by a Swiss physician, Weber, in the treatment of infantile diarrhœa, and under its influence the symptoms rapidly disappeared, the vomiting being arrested and the diarrhœa ceasing. He gave it in doses of three grains, with two drops of wine of opium twice daily.

The intestinal disturbances, which frequently antedate malarial diseases, call for two therapeutic measures, namely, quinine and an intestinal antiseptic. To meet the second indication salol has been found useful, because it divides in the intestinal canal into salicylic and carbolic acids, both of which check fermentation. The salol is rapidly eliminated with the urine. The dose in which it should be employed in such cases varies according to the age of the patient. To a newborn child, from one to three grains; to a child of two years, from three to seven grains; and to older children, from fifteen to thirty grains, may be given daily. This drug is also of service in the diarrhœas of typhoid fever and tuberculosis.

Betol (naphtalol or salinaphtol) is a salicylate of naphtol, made by the action of beta-naphtol upon salicylic acid, and appears as a white, crystalline, odorless powder. It is insoluble in water, slightly soluble in alcohol and in oils, and has rather an agreeable taste, which facilitates its administration to children, and it is especially valuable because its toxic property is very feeble. It is also useful in the treatment of adults, and may be administered by either the rectum or the stomach. For rectal use it may be employed as an injection, the formula of which, as proposed by Marcigney, is as follows:

℞.—Betol	½ drachm.
Borate of sodium . .	80 grains.
Weak infusion of eucalyptus .	1½ pints.

It may be put up in cachets, each containing seven and a half grains. It may be associated with salol, or salicylate of bismuth, or both, or with the bicarbonate of sodium, prepared chalk, or magnesia. The following preparation is of special service in infancy:

℞.—Betol, from . . .	15 to 30 grains.
Syrup of orange-flower .	7½ drachms.
Mucilage water . .	5 "

Of this a dessertspoonful should be given in twenty-four hours.

The betol may also be administered in milk. It is an excellent intestinal antiseptic.

Aristol (the biniodide of dithymol) is rapidly coming into favor as an excellent substitute for iodoform. It possesses all the therapeutic properties of iodoform without having the inconveniences of its odor and its irritant and poisonous action. It is a reddish-brown amorphous powder, becoming more and more pale as it loses its iodine from exposure to heat or light. It is soluble in water, and glycerin, slightly so in alcohol, and very soluble in ether, chloroform, and liquid vaseline. The powdered aristol has already rendered great service as a cicatrizing agent in ulceration of the skin and mucous membranes, in epitheliomata, in ulcers of the leg,

and in tuberculous aud syphilitic ulcerations. Its application to these ulcerations is not painful, nor does it produce any of the phenomena of general poisoning, as does iodoform. Under the form of a pomade containing from ten to twenty parts of aristol to one hundred of vaseline, it has been used in cutaneous diseases, such as psoriases, eczema, lupus, etc. Some observers have employed it in diseases of the nose, throat, and larynx, and it has been used in gynecological practice in the treatment of endometritis, erosions of the cervix, and vulvar eczema. Swieciki has made pencils and suppositories thus:

℞.—Aristol . . . . . 80 grains.
Gum arabic, a sufficient quantity to make five pencils.

And

℞.—Aristol . . . . 7½ to 15 grains.
Ol. theobrom., sufficient to make one vaginal suppository.

It may be used in ethereal solution, or in collodion if so desired.

Internally it has been given in pill-form associated with the hyposulphite of sodium in cases of fœtid bronchitis and gangrene of the lung, with excellent results. In four or five days the sputa lose their offensive odor and the general condition is greatly improved. In pulmonary phthisis it diminishes the amount of expectoration.—Huchard, in *Revue Générale de Clinique et de Thérapeutique*, January 14, 1891.

THE TREATMENT OF SYPHILIS.

Professor Köbner, of Berlin, at the conclusion of a discussion on "The Treatment of Syphilis," gave the following *résumé* of his experience and opinions.

1. Regarding excision of the primary affection, in only a small minority of cases was he able to prevent further symptoms of syphilis by this means. As a method of operation he recommends excision combined with electro-cauterization. It is indicated as a prophylactic only at an early stage of the chancre, and in extensive breaking down of the induration, or, if the latter is obstinate to ordinary treatment, for the purpose of removing the focus of the disease. The extirpation of inflamed inguinal glands is still more rarely successful and absolutely futile if deeper glands are involved.

2. He does not believe in the preventive treatment of syphilis by mercury, and thinks that the use of the remedy should be limited to hastening the healing of a serious primary sore, and to diminishing the danger of contagion, as in the case of a man with a family.

3. He considers the continuous mercurial treatment of Fournier by no means infallible, and for many cases superfluous, as demonstrated by several cases.

This method should be limited to certain indications, as to impending marriage or grave localization of the disease.

He further calls attention to the destructive influence of mercury on the digestion and on the nervous system.

In harmony with the majority of the specialists who attended the International Medical Congress, he refutes Fournier's statement that syphilis becomes "*presque fatalement tertiaire*" without a saturation of the system for years with mercury.

Mercury alone cannot cure syphilis in a person who was not previously healthy, unless the health is greatly improved by hygienic treatment. Upon the hygienic management he lays great stress.

In several individuals, who could not take mercury by the mouth, the rectal administration proved efficient and safe.—*Berliner klinische Wochenschrift*, December 29, 1890.

TREATMENT OF CONSTRICTIONS OF THE ILEO-CÆCAL VALVE.

Péan divides constrictions of the ileo-cæcal valve into two classes, those due to neoplasms and those of inflammatory origin. Various methods of treatment have been suggested: Maydl, Barton, and Jessop have formed an artificial anus above the joint of constriction; Barton resorted to digital divulsion, and Kraussold, Maydl, and Barton have not hesitated to perform resection. Péan suggests, as a new form of treatment, dilatation at the point where the constriction exists without taking away any portion of the intestinal tube. This is done as follows: An inch and a half above and parallel to the fold of the groin, an incision is made through the skin and cellular tissue from the anterior superior iliac spine to the spine of the pubes, and for half this distance through the aponeurosis and muscles. An opening through the peritoneum, half an inch long, is then made. Bleeding vessels are clamped and all antiseptic precautions observed. As soon as the ileo-cæcal valve is discovered the bowel is tied above and below the cæcum with a rubber tube, which is passed through the mesentery by the aid of sharp-pointed forceps. These precautions having been taken, the intestinal wall is incised at the level of and at each side of the valve for a distance of three inches. After washing the internal surface with a solution of carbolic acid (1-to-100), the condition of the valve can be ascertained. All abnormal tissue filling up the lumen of the bowel is then cut away close to the mucous membrane. This being done, the two extremities of the intestinal wound are brought together by means of the forceps. The incision, which was at first longitudinal, takes now the form of a lozenge, two sides of which are represented by the lips of the small intestine and the other two by those of the large intestine. Bringing the forceps nearer together the incision becomes transverse, and in this position the edges are sutured. Catgut is used to unite the mucous membrane and muscular coat, and silk for the outer portion of the muscular and the serous coat. The ends of the latter are cut off close. The rubber tubes are then untied, and soon after this the blood resumes its course in the vessels, and the fæcal matter begins to pass through the bowel with incredible rapidity. Should the sutures give way and gas and

fæces escape, the abdominal cavity should be washed out with sublimate solution, and the stitches re-inserted. Iodoform is dusted over the bowel, the abdominal wound is closed and covered with a dressing of iodoformized, sublimated wadding.

The reasons of Péan for preferring this mode of operation are:

1. That it is easily performed, since the surgeon operates upon a superficial portion of the bowel, and one which is easily seen.

2. It requires a smaller number of sutures than does resection, which shortens the duration of the operation, and diminishes the chances of perforation, of fæcal fistula, of an artificial anus and of septic peritonitis.

3. It does not give rise to a circular constriction, as does resection.

4. Finally, it establishes at the place of constriction, a dilatation large enough for the fæcal matters to pass through.—*Bulletin de l'Académie de Médecine*, December 30, 1890.

REVIEWS.

PHYSICIANS' LEISURE LIBRARY, No. 6; MODERN TREATMENT OF HEADACHES. By ALLAN MCLANE HAMILTON, M.D. Detroit: George S. Davis, 1890.

THE chief value of this book to the ordinary practitioner of medicine will be the prescriptions which are to be found on almost every page, and also in the directions which are given for the application of electricity and other external methods of giving relief to persons suffering from headache. The book, like most of its series, does not profess to be a very deep or learned account of this most frequent symptom of disease, and is, in consequence, not loaded down with much bibliography, but with practical material.

The author recognizes the fact that gout and rheumatism are often the cause of a great deal of cephalic pain, and is not content with describing the treatment of headache by drugs but also gives instructions as to the diet.

A BIOGRAPHY OF EPHRAIM MCDOWELL; WITH ARTICLES RELATING TO OVARIOTOMY. By MARY Y. RIDENBAUGH. New York: Charles L. Webster & Co., 1890.

THE author of this work is the granddaughter of the man who has been called the "father of ovariotomy," and she has been sufficiently impartial to include both those things which are favorable and unfavorable to this great surgeon. After reading the details of his life we are told of his idiosyncrasies and those of his relatives, more particularly concerning James Nash McDowell, a nephew, who was so bitter toward Abraham Lincoln that the following authentic story is told of him:

"The Doctor had a crank idea that in that commodious building one room should be set apart and designated as 'Hell,' in commemoration of Abraham Lincoln, who, although long since dead, held a bitter place in the heart of the eccentric old doctor. It was my pleasure to visit my relative (Dr. McDowell) soon after he refitted up his college and residence; and after his congratulations of meeting were over he remarked that he wanted to take me to 'Hell.' Not comprehending his meaning, I replied, 'I hope I shall never be so unfortunate as to see H—l.'

"He immediately caught me by the arm, and leading me through several narrow hallways, we finally halted in front of a very heavy double door, when drawing a large brass key from his pocket and placing it in the lock, the door soon yielded and swung wide open.

"I noticed as I passed into this strange room that the word 'Hell' in gilt letters stood out in bold relief over the entrance. The room was very long and narrow, and lacked carpet or other furniture.

"On entering this Dantean abode, the first salutation that greeted me was the venomous hissing of an unusually large rattlesnake, that was to be seen darting out its fiery tongue between the bars of its cage.

"To the left a huge crocodile was noticed, such as crowd the southern sloughs and bayous, and dot the lowlands and canebrakes of the tropical country. The hideous reptile crept slothfully through his pool of tepid water, now and then swinging his immense jaws as though he would like to make a meal of us; but he too was confined within his own limits, and there was no danger.

"Becoming interested in this weird and unnatural place I followed the Doctor, not unwillingly and certainly with a much aroused curiosity, deeper into the mysteries of his 'Hell.'

"Glancing to our right we saw the bird of ill omen perched upon his pole, seemingly oblivious of us or of its surrounding; occasionally it would grit its bill together, causing a peculiar unwelcome sound. Alongside the bird was a lizard, singing its unvaried song.

"At the extreme end of the narrow hall-like room a gallows had been erected, suspended from which was an effigy of ex-President Abraham Lincoln. For a moment (the scene was so life-like) I was shocked and startled.

"There were several other images, one in particular representing Lucifer and his imps. It was a novel sight to witness. Dr. McDowell took a lively interest in everything connected with this particular apartment."

The book loses part of its value from the absence of an index, although the table of contents is sufficiently voluminous to give a very good idea of what it contains. The labor of collecting the material for its pages must have been very great, and we hope that the author will sell a sufficient number of copies to remunerate her for her expenditure of time and money.

CORRESPONDENCE.

CHICAGO.

ACCORDING to the last report of the Chicago Board of Health, the registered deaths from all causes in this city for the past year were 16,946. Of these, 724 were by accidents, 182 by suicides, 45 by murderous shootings, stabbings, blows, and violence; 215 women from confinement, miscarriage, or abortion; 295 children were born defective or died of causes incident to birth, and 3 persons were found dead, making 1482 deaths not caused by sickness. Deducting the above from the total mor-

tality, we have 15,464 deaths from sickness. Of these, 5499, or 35 per cent. of the whole, were from diseases of the respiratory tract. Consumption caused 1556 deaths; pneumonia, 1170; bronchitis, 876, and so on throughout the list. 1705 deaths were from diseases of the pharynx and larynx, and 3794 from disease of the tubes and tissues of the lungs.

The foundation for a complete cottage system has been laid here for insane patients. The four cottages now almost completed are model institutions, everything connected with them being of the latest improved pattern. They were erected at a cost of $55,933. The small percentage of patients cured at the insane asylum compared with the State institutions is undoubtedly due partly to the fact that the State institutions send their incurable cases from this county to Dunning and partly to the arrangement of the buildings. Many cures cannot be effected unless the patients are properly classified, and this cannot be done in any other way than by the cottage system.

Dr. John A. Benson, Superintendent of the Insane Asylum at Jefferson, presented his annual report to the Public Service Committee a few days since. During the year 470 patients were admitted, and the daily average of inmates was 1066.

The late Professor James Adams Allen donated his large and valuable library to the Presbyterian Hospital for the special service of the staff. It may be used, however, by the permission of the superintendent, for reference by members of the profession and by the students of Rush Medical College.

The new edifice of the Woman's Medical College contains everything to be desired in the way of offices, laboratories, dressing- and study-rooms, and a commodious amphitheatre unrivalled for comfort and convenience. One of the amphitheatres of the old building is still retained for chemical and anatomical lectures, so that the new rooms are kept free from the disagreeable odors necessarily connected with these departments.

Dr. I. N. Danforth reported to the Pathological Society a case of tubercular disease of the kidneys and bladder, and presented the diseased organs.

The patient was a man, thirty years of age. About four years prior to his death he began to experience pain in the region of the left kidney, and shortly after that the urine became purulent but remained normal in amount and free from blood. The symptoms, in the main, were negative. The amount of pus was not enough to indicate a cyst of the kidney or any great amount of trouble with the bladder. He had no elevation of temperature; and there was no cardiac disease, but an anæmic condition developed. His appetite and digestion failed; and he gradually lost flesh.

The autopsy revealed a tubercular deposit in the upper lobe of the left lung, with two or three small recent cavities, but no other disease except the lesion of the left kidney, ureter, and bladder, which were presented for examination. The ureter was pervious, although the passage was small, but did not communicate with the bladder. The kidney was enormously large and lobuated. The bladder was somewhat thickened, and at the point where the left ureter should enter the bladder there was a hard, fibrous mass, which could very easily occlude the ureter.

Dr. Henry T. Byford, in speaking of the healing of open wounds without suppuration, in a clinical lecture, said that the secret of causing a wound to heal without suppuration is really known to but few, although the principle is known to all. The principle involved in the method he uses is that germs cannot develop without moisture, and the whole secret consists in keeping the wound dry.

His method is to pack the cavity loosely with sterilized gauze if it be large or with sterilized absorbent cotton if small, and use a dry aseptic dressing over all. Neither iodoform nor any other powder should come between the packing and the dry gauze over it, for powder interferes with efficient capillary drainage and the sterilizing process. In extraperitoneal wounds, the packing should be changed from two to four times daily, if the discharge is serous or purulent, until the packing is no longer wet through, then once a day, then once in two days until the dried surfaces have contracted. As long as the discharge is purulent or abundant, he washes the cutaneous edges with alcohol at each dressing to keep the skin clean. The cavity is merely dried out thoroughly with absorbent cotton or gauze, and neither drugs nor moisture allowed in it. In hospital wards, where serous cavities are frequently opened, this method he considers invaluable, since it enables us to do away, to a great extent, with suppuration and its dangers.

"DIGESTION, ASSIMILATION, AND OXIDATION."

To the Editor of The Medical News,

Sir: I wish to call attention to several statements which were made in the lecture on "Digestion, Assimilation, and Oxidation: their Normal and Abnormal Conditions in Relation to Health and Disease," in The Medical News, January 10, 1891. These statements, if not absolutely incorrect, are certainly misleading and not in accordance with the facts and experiments of progressive physiological chemistry. The points to which exception is taken are contained in the following sentences, which, for the sake of clearness, are quoted intact: "The chemico-physiological activity of the saliva is located in the ptyalin, which is an organic *nitrogenous* ferment, having for its function the hydration of starch, or the conversion of starch into maltose, conveying it, as it were, one step forward in the chemico-physiological process. This action is effected in *only an alkaline* solution, or in an *acid medium* the percentage-acidity of which has not exceeded *ten per cent.*"

First, in regard to the nature of the ferment which produces this change in the amylaceous elements of food, the writer states unrestrictedly that it is an organic nitrogenous body. Although elaborate methods are employed by which there may be obtained from saliva solutions which appear to be almost entirely free from proteids and yet are intensely amylolytic, "even these"—so says Foster—"probably contain other bodies besides the really active constituent." "Whatever," he continues, "the active substance be in itself, it exists in such extremely small quantities that it has never yet been satisfactorily isolated; and, indeed, the only clear evidence of its existence is the manifestation of its peculiar powers." It seems hazardous, therefore, to make any dogmatic statement concerning substances which, like

ptyalin, pepsin, amylopsin, or the enzymes in general, have been obtained in such small quantities at a time and in a state of such questionable purity that their exact chemical characters have not yet been ascertained.

The most elaborate method and the one most employed in obtaining the digestive ferments in a state of comparative purity is that by which Brücke separated what he termed pepsin. This method depends upon the ferments being carried down from solutions with precipitates produced in them. Cohnheim applied this method of Brücke to the saliva, and employed calcium phosphate as a precipitate to carry down ptyalin. But calcium phosphate carries down with it not only the ptyalin, but also the albumin and doubtless other proteid matters in the saliva. The complete separation of these bodies from ptyalin is very difficult and the final analysis of the substance obtained, showing the presence of nitrogen, has led to the assumption on insufficient grounds that ptyalin is nitrogenous. The only real proof, aside from this imperfect analysis, rests on the fact that its action is destroyed by boiling.

Next, in regard to the medium in which the saliva exhibits this peculiar amylolytic power, and the hindering or destructive influence of acids and alkalies on the diastatic action of the salivary ferment. Dr. Porter states that "this action is effected only in an alkaline solution or in an acid medium the percentage-acidity of which has not exceeded ten per cent."

The early experiments employed to demonstrate this point and from which the above conclusions, or similar ones, have been drawn, were inadequate, because based on rough calculations and a neglect of the real reaction of the chemical substances used. The starch used was apt to be acid in its reaction, and the normal alkalinity of the saliva (0.080 per cent., calculated as sodium carbonate) was not properly taken into account.

It is undoubtedly true, as a general principle, that the conditions in the body-economy are the best suited to the ends they are intended to accomplish. This argument has been used as one method of demonstrating that the natural and true acid secretion of the gastric juice is hydrochloric rather than lactic acid. The fact that pepsin is found experimentally to digest proteid matter most readily and completely in hydrochloric acid solution is an argument in favor of that acid as the one really provided and employed by nature. Thus, since the saliva is normally alkaline in its reaction, it is fair to suppose that the action of its ferment would be most manifest in such a medium. The experiments by which it was proved that such was not the case, although interesting, historically, in showing how a popular and well-grounded belief must yield to precise scientific investigation can only be alluded to here and the steps of proof given in passing.

At some time previous to 1885 it was demonstrated by Chittenden and Ely that neutralized saliva had as great diastatic power as the unneutralized or normally alkaline saliva. Even in this experiment the recorded result plainly indicated a greater diastatic power on the part of the neutralized saliva, the alkaline saliva converting 41.58 per cent. of the starch into sugar, while the same quantity of neutralized saliva changed 43.28 per cent. Although in this experiment the amount of saliva used was large, and thus an element of possible error introduced, still every precaution of precision was taken, and the starch employed was manufactured by the experimenters in such a way that it should be absolutely neutral in its reaction.

In 1884 Langley and Eves[1] made the statement, unaccompanied by data, that "neutralized saliva converts starch into sugar much more actively than unneutralized saliva." These two statements are quoted by Chittenden and Smith[2] in their article on "The Diastatic Action of Saliva," as the only two recorded statements up to that time regarding the relative diastatic action of the neutralized and normally alkaline secretion. The experiments of Chittenden and Smith show that there is a very great difference in the action of ptyalin in neutralized and unneutralized saliva—a difference more manifest when the saliva is greatly diluted, the explanation of which will appear later.

The influence of sodium carbonate on the diastatic action of saliva has also been made the subject of experiment, and the conclusion of Chittenden and Smith is that "even much less than 0.0015 per cent. of sodium carbonate with unneutralized diluted saliva may decidedly retard the action of the ferment, while in similarly diluted saliva 0.005 per cent. of sodium carbonate may prevent diastatic action almost entirely."

As to the influence of acids on the diastatic action of saliva, Dr. Porter states that the action is effected "in an acid medium, the percentage-acidity of which has not exceeded *ten per cent.*" A large number of experiments to demonstrate the influence of acids on the diastatic action of saliva have been made by Langley and Eves, Chittenden and Ely, and Chittenden and Smith, and attention has been called to the fact that no definite statement can be made as to the absolute percentage of acid necessary to hinder or destroy the ferment's action. For there are two very important elements which come in to modify the influence of the acid or alkali, and which permit of only a general statement or a statement for a saliva of a certain dilution. These are the conditions of the acid or alkali, whether free or combined, and the amount of proteid matter present.

That the presence of proteids influences the diastatic action has been proven, and it has been pointed out by Chittenden and Smith[3] that in addition to the combination of peptone and acid, the proteid matter manifests a direct stimulating influence. Thus the presence of 0.025 per cent. hydrochloric acid prevented the conversion of but 3.50 per cent. of the starch into sugar, the presence of 1 per cent. of peptone allowed the conversion of 48.85 per cent. of the starch.

The method recommended by Danilewsky for the detection of free acid by the use of tropæolin OO dissolved in methyl alcohol, now enables us to distinguish free acid present from that combined. Both combined and free acids influence the action of saliva, and both have a hindering and destructive action. The combined acid (or presence of acid-proteids, formed by the action of the acid on the proteid matter in the saliva) causes an increased action of the ptyalin, except when present in comparatively large amount, so that while combined

[1] Journal of Physiology, vol. iv. No. 1.
[2] Transactions of the Connecticut Academy, vol. vi.
[3] Loc. cit.

acid has some destructive action, the retarding influence of the larger percentage of acid-peptones is out of all proportion to their power of destruction.

In testing the influence of *free* acids on the diastatic action, it must be borne in mind that the normal alkalinity of the saliva is 0.080 calculated as sodium carbonate, and that the saliva contains a certain amount of proteid matter. When the saliva has been very carefully neutralized and its proteids just saturated, it is found that 0.0010 per cent. of *free* acid appreciably diminishes the saliva's action, and 0.0030 per cent. almost entirely stops the amylolytic action. Moreover, acid approximating to the strength of the acid of the gastric juice has a *destructive* action on the salivary ferment, The action of 0.002 or even 0.005 per cent. of hydrochloric acid for thirty minutes, causes little if any destruction of the ferment, since on neutralization diastatic action is vigorously continued. Pronounced destruction does take place with 0.005 to 0 010 per cent. of free hydrochloric acid. Thus, we see that under no condition could the amylolytic action of the ferment take place in an acid medium the acidity of which was 10 per cent.

The importance of this subject is shown from its bearing on the amylolytic action of saliva in the stomach. It is well known that during the early stages of digestion, there is no *free* acid in the stomach, and that as digestion in the stomach proceeds the acidity increases. Thus the amylolytic ferment of the saliva undoubtedly continues its action on the starchy foods for some time in the stomach and until its acid-proteids increase in amount and approach to their point of saturation. Even before *free* acid makes its appearance, the diastatic action may entirely stop, and all salivary ferment must ultimately be destroyed in the stomach.

The writer in his classification of food-stuffs says, "so far as nourishing or building up any of the component parts of the body is concerned, starch, sugar, and fat furnish *no nutriment* to the system and in this sense I shall continue to speak of the CHO compounds as being absolutely non-nutritious, and only of service to the body in so far as they yield heat, energy, lubrication, and *rotundity of form*." And again he divides the food-stuffs into two classes, first, "the *nutritious* albuminous, nitrogenous, or CHNOS compounds, and, second, the *non-nutritious* starches, sugars, and fats, or the CHO compounds."

In making this division of food-stuffs into *heat-producers* and *tissue-formers*, he has adopted a classification which Huxley calls "misleading and indeed erroneous." That the proteids are oxidized is undoubted and their oxidation, as well as the oxidation of non-nitrogenous foods, must give rise to heat and energy. And from the evidence of carbonaceous waste when a muscle contracts there is reason to think that the non-nitrogenous foods may also be directly built up into the tissues. Mr. Huxley says, moreover, that "as soon as the elements of the food, in fact, get into the blood, the distinction between the two classes is lost; *both* form tissues, and *both* supply heat." For this reason Huxley prefers the classification of the vital food-stuffs into the *essential*, or proteids, they alone being, in the nature of things, necessary to life; and the *accessory*, or fats, sugars, and starches, which, however important, are not absolutely necessary.

Finally, Dr. Porter states regarding the digestive action of the gastric juice that "the *nitrogenous* envelope surrounding the starch-granule or oil-globule may be digested away, thus setting free the granulose and oil." This he calls the starch-hydrating and fat-freeing action of the stomach.

According to the teaching of organic chemistry we learn that starch is a white, velvety hygroscopic powder consisting of round or elongated granules in concentric layers, the interior of these granules being granulose and their husk cellulose. A possible erythro-granulose may exist. These chemical substances are, however, in all text-books of organic chemistry, classed among the carbohydrates and are never credited with any nitrogen. Their formula $(C_6H_{10}O_5)_n$ shows that besides carbon they contain only hydrogen and oxygen, always, too, in the same proportion in which their elements are present in water, therefore, they (and this of course includes the starch-envelope) are true carbohydrates and non-nitrogenous.

GEORGE L. AMERMAN.
137 WALL STREET, NEW HAVEN, CONN.

NEWS ITEMS.

Report on Koch's Lymph to the Dauphin County Medical Society.—At a recent meeting of the Dauphin County Medical Society, Drs. E. H. Coover, Thomas J. DuNott, and Hugh Hamilton reported upon Koch's lymph after many observations in the hospitals of New York and Philadelphia, which they had visited. This committee regard the discovery as one of much importance, its power being intense, the rapidity of its cure unparalleled; but the committee warns the profession and the public against the dangers of the method in the hands of unskilful persons. In treatment by the lymph the most salubrious surroundings are necessary, the diagnosis must be absolutely correct and the control of the patient by the physicians unquestioned. Such conditions are alone attainable in proper hospitals or in private with the best environments.

American Electro-therapeutic Association.—The American Electro-therapeutic Association was organized on January 22, 1891, at the Academy of Medicine, No. 17 West Forty-third Street, New York, by the adoption of a Constitution and By-laws, and the election of the following officers:

President.—G. Betton Massey, M.D., of Philadelphia.

Vice-Presidents.—William James Morton, M.D., and Augustin H. Goelet, M.D., of New York.

Secretary.—William H. Walling, M.D., of Philadelphia.

Treasurer.—George H. Rohé, M.D., of Baltimore.

Executive Council.—Horatio R. Bigelow, M.D., of Philadelphia; Franklin H. Martin, M.D., of Chicago; William F. Hutchinson, M.D., of Providence, R. I.; Frederic Peterson, M.D., of New York; and Chauncey D. Palmer, M.D., of Cincinnati, Ohio.

The object of the Association, as stated in Article II. of the Constitution, is "The cultivation and promotion of knowledge in whatever relates to the application of electricity in medicine and surgery."

The Association starts with a strong and vigorous

membership, and has every prospect of a most useful and successful career.

The next meeting will be held in Philadelphia, in September of this year.

William H. Walling, M.D., Secretary, 2005 Arch Street, Philadelphia, Pa.

Marine-Hospital Service.—The annual report of Dr. John B. Hamilton has been made to the Secretary of the Treasury for the year ending June 30, 1890. The medical inspection of immigrants in New York harbor is a newly-assumed duty that, during the latter part of the fiscal year, fell to the charge of this service. It is expected that a hospital and asylum will presently be required, to be established on Ellis Island, in order to deal humanely and efficiently with some of the unfortunates who are shipped to this country as an economical way of disposing of troublesome charges. In regard to the constant menace from Cuban yellow fever, the report avers that this country would be a gainer, in a pecuniary sense, if it could give to the Cuban Government sufficient funds to make and keep Havana a healthful seaport. The past year was the ninety-first of the existence of the service.

Suit for Damages on Account of Pain after Amputation.—This suit was brought for damages against a railway corporation, the result of an accident which was the occasion of the amputation. The case was heard in the courts of New York State, and was carried up to the Court of Appeals; the defendant was the Delaware, Lackawanna and Western Railway. The action was brought to obtain compensation for damages, because of a "special kind of pain" complained of after the amputation of an arm, namely, a pain which is located in the member that has been cut off. The plaintiff was allowed to testify on the trial that he had suffered continuous pains seemingly located in the amputated hand and arm, and on appeal it was argued that such testimony should not be allowed. The appellate court has recently decided that this objection was not well taken, and that the plaintiff's evidence was competent. One of the points raised by the defence was that this pain in the hand and arm of the plaintiff was purely imaginary and a delusion, and that, because the arm had been cut off, there could not possibly be any pain located therein. The Court of Appeals meets this contention by means of the following answer from the standpoint of law: "The reason urged in support of the exception is that such pain was imaginary and a pure delusion and was not a direct or a natural result of the injury received; the plaintiff had testified that this was a part of the painful suffering he had endured after the accident and the amputation of the arm, and whatever was its nature, if his testimony was true, the sensation was that of pain and the result of the injury. Pain is but the sensation of a condition that produces it, and the fact that it seemed to come from or to reside in the hand, as if its connection with the body remained, is only descriptive of the pain he suffered. It was no less the subject of consideration because the location of it was deceptive."

Plain Statement from the Medical and Surgical College of New Jersey.—The Medical and Surgical College of the State of New Jersey has just published a "Plain Statement" of its contest with the health authorities of Jersey City. It is published in a pamphlet of forty-six pages, and is probably as candid a statement as was ever made by any so-called college; it contains enough testimony against itself to damage the faculty forever. The head of the concern is proved, by this pamphlet issued over his own signature, to be an offspring of the bogus institution run by "Dr." Buchanan under the style of the Eclectic Medical College of Pennsylvania, and to be an advertising specialist residing in New York City. Connected with the scheme are several men who have doubtful reputations. According to the statement of the Hudson County Medical Society (THE MEDICAL NEWS, February 7, 1891), the so-called college has never had any of the conveniences or requisites which would enable its so-called students to attend either hospital instruction, clinics, or anatomical demonstrations. One of the students stated, however, that there had been two dissections of sheep's heads, and one of a calf's heart. It does not appear from the pages of this pamphlet that any reputable citizen of New Jersey has ever been, or has ever been invited to be, connected with the undertaking. Nevertheless, there have been allowed to "graduate" two classes, one containing twelve persons, and the last containing three; one of these persons only claimed a residence within the limits of New Jersey.

Medical Organization in Japan.—The *Tei-I-Kwai Medical Journal* of Tokyo, Japan, November 22d, describes in idiomatic language the establishment of a national society of the medical men who have studied their profession in America and Europe. It says: "The principal leaders in Tokyo caused themselves to start a medical association for the object of which they have to gather all the medical brethren in every province of the Empire and to exchange their knowledges. The endeavor of them brought this scheme to born in April first under the name of the First Japanese Medical Association, the meeting was held for a week and was closed with every success. It was hoped to hold this Association in future once every four years." There are not more than 5000 who have the knowledges above referred to, but they stand in the forefront of reform, "for indeed the reformation of Japanese medicine is the task of them, for this object they join to constitute medical societies and respective society endeavors to publish their journal."

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication, or 250 reprints will be furnished instead of payment, provided request for reprints be noted by author at top of manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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ORIGINAL ARTICLES.

DIPHTHERIA: ITS CAUSE AND TREATMENT.[1]

BY WILLIAM P. MUNN, M.D.,
OF DENVER, COL.

THE almost constant prevalence and the unmitigated fatality of diphtheria make it a subject for the consideration of which no apology is necessary. It is as constant and important a factor in our mortality reports as is consumption or typhoid fever, and yet, notwithstanding the frequent opportunities to study it, there still exists some uncertainty as to its mode of origin. Does it originate in the local lesion, or is the local lesion a result of the systemic affection? In considering this question we must remember that the lesion may and often does exist elsewhere than in the fauces, sometimes making its appearance there as one of the later manifestations, and occasionally altogether failing to appear. The original local lesion may exist in an unobserved portion of the nares or larynx, and being for some days uninterfered with, the systemic disease may manifest itself prior to the discovery of any lesion in the throat. Such a case would *appear* to prove the secondary character of the faucial exudate, but it can by no means be held to prove the systemic origin of the disease, especially since we know not only that a local lesion *may* exist for days without the occurrence of any constitutional symptoms, but that it is occasionally, though rarely, the only manifestation of the disease. The weight of evidence seems to be in favor of a local origin, and the apparent preference for the nose and fauces is most reasonably explained by the hypothesis that the germ is usually inhaled or swallowed, and is, of course, more liable to find lodgement there than at any other point. Then, too, abrasions of the mucous membrane in this locality are of frequent occurrence and offer a favorable spot for germ-lodgement and growth, while the rich lymphatic supply of the throat provides an open avenue for systemic infection. In connection with this we know that children who are catarrhal seem to be especially susceptible to the disease, and that in them it is apt to be of a severe type. The predilection which diphtheria seems to have for certain families may be explained by the fact that those families are catarrhal, *i. e.*, every member of the family may have susceptible mucous membranes, not of the nose and throat alone, but also of the digestive and genito-urinary tracts. I have more than once observed the coincidence of this susceptibility with the occurrence and recurrence of a peculiarly malignant type of diphtheria.

The cause of diphtheria is at present very generally supposed to be bacterial, but whether the bacteria themselves, or the ptomaïnes resulting from bacterial life and growth, are the cause is not yet determined. Several investigators claim to have isolated the specific bacillus, or coccus, as the case may be, and each one is morally certain that his is the morbific agent. The Klebs-Löffler bacillus and the streptococcus diphtheriæ of Prudden seem to have a more definite relationship to the disease than have any other microörganisms yet isolated, and it is possible that both forms may have a connective relation to similar necrotic processes, the clinical phenomena resulting therefrom being identical.

This supposition is not entirely hypothetical, but, on the contrary, is entirely in accord with the general trend of late bacteriological investigations. For example, certain forms of pleurisy are plainly of a non-microbic origin, being dependent on rheumatism, plumbism, or similar conditions causing chemical changes in the blood, while the microbic variety may be due to the presence of anyone of a number of microörganisms — among those which have already been found being the tubercle bacillus, the typhoid fever bacillus, the streptococci, the staphylococci, and the encapsulated diplococci of Fränkel.[1] A very interesting suggestive fact in this connection is that the streptococcus diphtheriæ of Prudden[2] seems to be identical with the streptococcus erysipelatous and the streptococcus pyogenes, varieties of micrococci with which bacteriologists have been familiar for some time. This identity is proven, not simply by morphological resemblances, but by a series of biological and chemical tests and control experiments. This discovery points to an explanation of the oft-noted clinical relationship of diphtheria, erysipelas, and scarlatina. However close may be the primary causative relationship of the coccus to the disease, there ensue during the pro-

[1] Read before the Denver Medical Association and Arapahoe County Medical Society, December 18, 1890.

[1] Third Italian Congress of Internal Medicine. THE MEDICAL NEWS, December 13, 1890.

[2] American Journal of the Medical Sciences, April and May, 1889.

gress of the disease certain pathological changes with which the coccus does not seem to be intimately concerned, as well as the immediate changes of which it may undoubtedly be considered the exciting cause.

Locally the pathological changes occur in the following order: ulceration and modification of epithelial cells, migration of leucocytes, and exudation of fibrin and lymph. Constitutionally, the disease manifests itself as a malignant, disintegrating, and degenerating force acting upon the blood, which it probably reaches indirectly through the medium of the lymphatics. There is a manifestly increased tendency to fibrin formation as evidenced by the character of the faucial membranes as well as by the exudates which occur in any portion of the body where a synchronous inflammation or injury exists. There is also an influence exerted which disintegrates the red blood-corpuscles, or failing in that, interferes with the performance of their functions as oxygen-carriers; thus lowering vitality, retarding nutrition, and preventing the proper elimination of waste products. It is asserted that bacteria cannot exist in living, active, circulating blood, and if this be so, then the hæmatic changes just described cannot be due to the *immediate* action of the so-called diphtheria germs, but *may* be due to the chemical affinity of their ptomaïnes for the hæmoglobin of the red blood-corpuscles.

So much for the theoretical pathology of the diphtheritic processes, a problem still enveloped in more or less uncertainty. But it seems that modern investigation is daily approaching more closely to the solution, and we may soon expect to appreciate definitely the true nature of this the most horrible of modern contagious diseases, and to gain from that knowledge some indication as to the proper treatment, perhaps even a revelation as to its absolute prevention.

It is unnecessary in a paper of this character to dwell upon the symptomatology and course of the disease, that being a subject with which every practitioner is only too familiar.

In regard to fatality, it has been my experience that different epidemics seem to vary—one year the major portion of all the cases recover, the next year the majority die, and this occurs irrespective of the treatment adopted. It is a general rule, however, that the severity of the case depends on the extent of the membrane and the rapidity of its formation. Of cases in which the tonsils only are involved, we rarely lose more than 10 per cent. If the nose and palate are involved, about 50 per cent. die; if the larynx only is invaded, 75 per cent. die; while if the nose, fauces, and larynx are all invaded, at least 90 per cent of the cases will be lost.

The occurrence of temporary paresis as a sequel of diphtheria is a very common event, possibly the soft palate is most often affected, although in my own experience strabismus has occurred about as frequently as paralysis of the palate. The vocal cords and the peronei muscles of the leg come next in frequency of involvement, while multiple paralyses and general paresis are infrequent. The patients generally recover from local palsies, with little or no medication, although general tonics and electrical stimulation are never out of place.

I have twice seen beginning anterior spinal curvature as a sequel of diphtheria: in one case in a girl of twenty years at the second lumbar vertebra; in the other at the cervical region in a girl of six years. Sayre's plaster-jacket and the "jury mast"—with the preparations of iron, the phosphates, and cod-liver oil internally—arrested its progress in both cases. I have never had permanent paralysis in any of my own patients, although, no doubt, it sometimes cannot be avoided. The number of such cases would be very much diminished if all cases of diphtheria were kept under surveillance and treatment for some time after recovery.

Suppuration of lymphatic glands, especially of those of the neck, is a sequel of somewhat frequent occurrence, and should be treated upon the same general principles which apply to such suppuration occurring under other circumstances.

Differential diagnosis. — There are only a few conditions liable to be confounded with diphtheria by competent observers. When a membranous exudate accompanies the angina of scarlatina the conditions resemble those of diphtheria so closely that an error in diagnosis may well be excused, especially if the scarlatinal rash happens to be suppressed. Indeed, we may well ask whether the pathological conditions present are not exactly similar in both cases, and the query comes with additional force when we remember that Prudden has found the same streptococcus present in scarlatina, diphtheria, erysipelas, septic pneumonia, and simple phlegmonous inflammations. He suggests that its action may be modified and its virulence diminished by the chemical constituents present in the secretions under varying conditions. Whether this can be proven we do not yet know, but there is certainly enough positive knowledge to enable us to assert the close relationship, if not absolute identity, of the pathological processes in the two diseases. Clinical evidences of this relationship occur with great frequency. I may cite the following:

A family moved to a short street which for a year had been absolutely free from diphtheria, and from scarlatina for three years. The house into which they moved was new and had never before been occupied. Their infant child, a year and a half old, was suffering from scarlatina, which fact they

suppressed and as soon as the child had recovered they moved away without disinfecting the sickroom. As soon as the house was vacated, the children of the neighborhood went into this room to play, and in less than a week four of them were prostrated with a severe type of scarlatina. Every one of the four had been in the room. On the fauces of one of them an exudate appeared, and the rash in her case did not make its appearance until about the tenth day of her illness. When this child recovered she was allowed to keep a doll with which she had played while ill, and the doll in a few days passed into the possession of the children of a neighbor all of whom had suffered from scarlatina three years before. Three of these children were then seized with diphtheria, the membrane invading the nose in all, and in one extending into the larynx, with fatal results.

Being fully conversant with every circumstance of these cases, all but two having been under my personal care, I am certain that no other source of contagion existed, and that the last patients contracted diphtheria from the antecedent cases of scarlatina.

A less dangerous affection, which is often pronounced to be diphtheria; but which, as a rule is promptly recovered from, is ulcerative follicular tonsillitis. The infectious character of this disease and the slight resemblance of its muco-purulent exudate to the fibrinous exudate of diphtheria, may readily cause a mistake if the examination is superficial, but if the examiner takes the trouble to mop off the secretion with a little absorbent cotton fastened on a probe, the resemblance disappears. An actual mistake in discriminating between this condition and that which characterizes diphtheria, is of rare occurrence; but a great many practitioners, especially those of the homœopathic persuasion, prefer to call such cases diphtheria.

It will be noted that I have not thus far used the word "croup," and for this omission there are several reasons, viz.:

Croup is not properly the name of a disease, only a *symptom* which may occur in connection with any form of laryngitis, or as a simple reflex act. I can conceive of no tangible reason for dignifying a symptom by calling it a disease simply because it occurs when the diphtheritic process originates in the larynx or happens to invade it secondarily.

W. W. Johnston[1] insists that he has many times made post-mortem examinations of children who have died of what he calls "true croup," and that he invariably found the larynx filled with a fibrinous membrane, but that *no* ulceration was present. This last fact he regards as pathognomonic; if ulceration is present it is diphtheria, if ulceration is absent it is "true croup," which, he alleges is never contagious. If this be so, then the inoculation of healthy animals with material from the "true croup" membrane will be innocuous; but if the advocates of "true croup" have in late years attempted to substantiate by experiments their assertion of the non-contagious character of the disease it is not generally known.

On the other hand, those cases which are claimed to be typical examples of "true croup" almost invariably accompany or are associated in some way with diphtheria, and such invariable association can only be explained by the supposition that the two diseases are identical.

Fatal cases of croup usually occur in families or localities where diphtheria is prevalent. Non-fatal cases of croup are usually of that variety which finds the patient perfectly well one day, very sick the next day, and perfectly recovered on the third, thus giving rise to the suspicion that the medical attendant had applied the name of true or membranous croup to a case of catarrhal laryngitis, laryngismus stridulus, or hysteria of the larynx.

To my mind, the "membranous croup" of the books is a process, the pathology, clinical appearance, and treatment of which are absolutely identical with those of laryngeal diphtheria, the name croup is a misnomer, and its study as a separate disease has been a mistake, due to the idea that the epithelial surface remains intact in croup, although as Billroth states,[1] the remainder of the pathological processes may be "exactly similar."

Rindfleisch,[2] however, states emphatically that "croupous inflammation is preceded by a loss of epithelial covering," . . . . "the most frequent agent being unquestionably the action of cleft fungi," that being the class name under which he includes all bacteria.

The non-contagious character of croup is not so generally admitted as it once was.

Perfect fairness demands the statement that some of the best pathologists still insist upon the non-identity of croup and diphtheria; and Prudden, while an advocate of their identity, calls attention to the fact that in the investigation of twenty-four cases of diphtheria he failed to find the streptococcus in two cases, one of which had been pronounced by the attending physician to be "croup and not diphtheria." The patient, however, died, and within a few days another child in the same family became fatally ill with all the constitutional and local evidences of *diphtheria*, and "*the streptococci were found*, not only in the membrane, but in the viscera."

Another disease which may occasionally be mistaken for diphtheria, is that variety of putrid sore-

[1] American Journal of Obstetrics, September, 1888.

[1] Surgical Pathology, p. 312.

[2] Elements of Pathology, p. 34.

throat, which also affects the palate, causing œdema of the uvula and in extreme cases sloughing of the parts. Practically this is a phlegmonous inflammation, and if neglected or if the history is not known it may closely resemble diphtheria, but a few days' observation and treatment will, as a rule, clear up the matter, especially since such cases usually occur in adults.

I have seen one peculiar case in a man twenty-four years of age, in which a patch of membrane closely resembling the membrane of diphtheria, covered the tonsil of one side for about two weeks and seemed to defy treatment, although it did not extend. The patient was tubercular and I concluded that it was a tubercular ulceration. Some months later an unexpected discovery in regard to his degraded personal habits, led me to believe that it was of syphilitic origin, and in all probability an initial lesion.

Treatment.—The methods of treatment recommended for diphtheria are many. From time to time there arises an apostle of some new, or the resurrector of some old plan of treatment, who will laud his method to the skies, claiming for it invariable success and for *himself* the infallibility of an all-wise physician. Such men and measures rarely, I might say, never hold their own during two successive epidemics.

While it seems improbable that we will ever discover a remedy which will cure diphtheria as quinine cures malaria, yet it is by no means improbable that in the near future a method of inoculation will be discovered that will materially lessen the frequency of its occurrence or perhaps entirely eradicate the disease.

In the present state of our knowledge, however, it seems wise that we should map out a line of treatment by classifying certain morbid conditions which usually accompany or result from diphtheria, and that we should then, upon general therapeutic principles, combat these conditions or destroy their causes by the use of the most potent remedies in our materia medica. This may lead to multiplication of remedies, but it allows the widest latitude for the exercise of the discretion of individual practitioners, as well as for the adaptation of remedial measures to the idiosyncrasies of individual patients. It is a rational plan, and at least as successful as any other now in vogue. Treatment must be general and local. In considering the indications for general treatment we find that there are four, as follows:

1. Diphtheria is essentially a debilitating disease; it wears out the heart and it shatters the nervous system. If the patient does not die from any other cause he will die from heart-failure or nerve-fag; hence it is important that from the first he should receive positive and persistent stimulation and nutrition to the utmost limit of his capacity. The stimulant should be a diffusible one, prompt, efficient, and reliable. There is one remedy only that will answer all these requirements, and that is *alcohol.* It may be given freely from the beginning of the disease, and with greater frequency and in increased quantity as the circulation demands it. It is useless and foolish to administer it in small quantities. If we wish to have its beneficial action it must be administered freely and steadily. Brandy, whiskey, champagne, or sherry may be used, as the exigencies of the case may require. I have given as much as twelve ounces of whiskey daily to a child four years of age, and had good results. If at any time a more potent and diffusible stimulant, which is at the same time as safe as alcohol should be discovered, I believe it will take its place in the therapy of diphtheria. Digitalin, strychnine, strophanthus, caffeine, camphor, and musk, may be indicated in many cases as adjuvant stimulants, but none of them can supplant alcohol, though they render very efficient service in combating special conditions.

2. Diphtheria is a septic disease, and to antagonize and defeat the septic process the most powerful antiseptic agents must be used. That here, as elsewhere, there may be a variance of opinion as to the most available antiseptic for this particular purpose is by no means surprising. Peroxide of hydrogen, carbolic acid, sulphurous acid, sulphur, eucalyptol, thymol, and the soluble mercuric salts have all their ardent advocates, and all are, no doubt, useful. My personal experience has been favorable to the use of corrosive sublimate on account of its energetic antiseptic action, the smallness of its dose, and its complementary action, of which I will speak further on. A child of six years may be given at first $\frac{1}{80}$ of a grain every two or three hours, and this may soon be increased to $\frac{1}{15}$ or $\frac{1}{10}$ of a grain without ill effects. This dosage may be continued for many days, or even weeks. I have usually given calomel at the same time, and although the total dosage has been in some cases enormous, I have never seen any indications of mercurialism, and what is more to the point, the cases have been favorably modified as to malignancy, duration, and termination.

3. A third indication, which is purely hypothetical, is the supposed tendency of the blood to the formation of fibrin, and for the purpose of counteracting this tendency I am in the habit of giving large and continuous doses of calomel, its action in this matter being assisted by the coincident administration of the corrosive sublimate. The favorable results which so often follow this dosage seem to render the hypothesis more tenable, and while I do

not attempt to explain the process, I recognize the results, and accept them as a sufficient reason for the practice. Under this medication extension of membrane ceases, and the exudate becomes less tough, and hence more easily removed and expectorated, the whole aspect of the patient improving at the same time.

It is to be noted that in diphtheria calomel not only does not salivate, but it has little effect as a cathartic. Why this tolerance should exist we cannot tell, but that it does exist is indisputable.

Some observers have even made it a diagnostic rule, stating it thus:[1] *if moderate doses of calomel produce characteristic stools, the disease is not diphtheria.* My own experience has been somewhat in accord with this, but I do not affirm its uniform application. I have given from 2 to 5 grains of calomel every two hours until the bowels moved, and have observed the movements to be natural in form and consistency when even 40 or 50 grains had been taken. To one apparently desperate case, a boy four years old, I gave 160 grains in three days, with the following results: (1) the bowels moved naturally once a day; (2) the tongue cleaned off and appetite returned; (3) the membrane ceased to extend and began to liquefy, the case progressing favorably from this time on to ultimate recovery.

4. A fourth indication to be met is the disintegration of red blood-corpuscles. We as yet know of no more reasonable method of meeting this indication than by the administration of some preparation of iron. The experience of American physicians seems to justify the use of this remedy quite as positively as the pathological conditions demand it. The tincture of the chloride is the form generally given, in doses of from five to twenty minims, every two or three hours.

These four indications cover the customary demands for the internal medication of diphtheria. I usually prescribe the tincture of the chloride of iron and the corrosive sublimate together in some pleasant menstruum, such as glycerin or syrup of orange, followed by a full dose of whiskey; the calomel should be given from the very first until the bowels are moved once or twice, and afterward repeated, as may be necessary, for that object and for the limitation of membrane formation. It is well taken if administered in the form of tablet triturates dissolved in a little milk. The dosage must, of course, be varied as the exigencies of the case demand, but it must always be borne in mind that in no other disease is medication so absolutely necessary or so well borne, and that to be efficient it must of necessity be heroic. It is probable that under this treatment there are at least twice as many recoveries as under an expectant plan of treatment.

[1] J. C. Lange, 1889.

From time to time, in the last decade, and even within the current year, ardent advocates of the calomel treatment have made for it extravagant claims, to which its more conservative friends can by no means give their assent. Calomel does not and cannot cure all cases of diphtheria. There is no known medication which can achieve such results, and the boastful claimants of such success have, perhaps unconsciously, suppressed all mention of their failures and recorded only their successes. Then the advice to administer calomel without regard to the patient's general condition, until the passages resemble frog-spawn stools, which twenty years ago might be pardoned to Dr. Reiter[1] in his enthusiasm over the revival of an almost forgotten therapeutic method, is at this date, to say the least, exceedingly unwise.

Local treatment aims to do two things:

1. To destroy the disease-germ and render its ptomaïnes inert.

2. To cause softening of the membrane and ultimately its complete removal.

The first object is sought by the application of antiseptic powders, washes, sprays, and gargles. A favorite application with the laity is powdered sulphur, and it has been asserted to be the cause of many marvellous cures. Professional experience with it has, however, not been very satisfactory.

Occasionally, when the original lesion is seen at an early stage, and has not yet attained a large size, it has cleaned off, healed promptly, and been followed by no constitutional disturbance after thorough cauterization with nitrate of silver, carbolic acid, or a strong solution (1 to 50) of corrosive sublimate.

In the nose it is said that the progress of the membrane may be arrested by tamponing the nasal cavity with cotton soaked in a 1-to-100 solution of sublimate, the tampon being renewed every hour.

Spraying or syringing the throat with a 1-to-1000 or 1-to-2000 solution of corrosive sublimate, or 1-to-30 solution of carbolic acid has been of much service. One patient of my own, whose nose, fauces, and larynx were simultaneously invaded, recovered after three weeks of hourly syringing with a 1-to-30 solution of carbolic acid.

Either lime-water as a gargle, or the vapor of slaking lime as an inhalation every half hour, is a most useful adjuvant to our local treatment. After every such application and the use of the spray the patient will expectorate shreds of membrane, and respiration will become easier.

To soften the membrane all the digestive ferments have been made use of, and all are highly efficient. To be efficacious a sufficiently strong

[1] Diphtheria; a monograph. By W. C. Reiter. J. B. Lippincott & Co., Philadelphia, 1878.

solution should be brought thoroughly in contact with the membrane. An alkaline menstruum, such as lime-water or soda-water, is most efficient, and it is not wise to use the ferments in the same solution with corrosive sublimate, since it will materially lessen, if not altogether destroy, their activity. It is better to use them alternately, fifteen or thirty minutes apart.

Moist air, or air saturated with steam, is an adjuvant by no means to be despised. The arrangement known as the "croup kettle" is worthy of trial in every case.

If local applications are to be of any service they should be used frequently and thoroughly. The patient should not be allowed to sleep past the time for the inhalation or spray, but as long as the case is dangerous one or the other of these should be used every half hour, or oftener if very urgent. Not until decided improvement is noted should the interval be increased, and then only with considerable caution. They should be kept up at intervals of two hours or less until every vestige of membrane has disappeared.

As there is great danger of sudden cardiac failure at any time during the course of diptheria, the patient should be prevented from doing anything that will cause an extra effort of the already weakened heart. Cases are not infrequent in which sudden exertion has been followed by instant death.

The operative treatment of laryngeal stenosis is a subject important enough to demand a special paper. My own experience has been limited and disastrous, but I firmly believe that early operation in properly selected cases will prove more successful in the future than in the past. Whether the operation should be intubation, laryngotomy, or tracheotomy, will depend, in a very large percentage of cases, upon the personal predilections or experience of the operator, with this exception that intubation will more often gain the consent of the parents because it is not a "cutting" operation.

Tracheotomy is an operation never to be undertaken lightly. Many writers underrate its difficulties, but the majority of operators will concede that it requires better judgment, more experience, and greater skill than any of the more frequently performed capital operations. The proper performance of intubation requires even a higher degree of skill, and should rarely be undertaken except by an operator who has practised it frequently and successfully upon the cadaver.

DISCUSSION.

Dr. Austin G. Case, in opening the discussion, said that although diphtheria may be local in its origin, the physician is seldom called to see a case before the constitutional symptoms have manifested themselves. In treatment the medication which has given him the best results in one series of cases has frequently failed to benefit in another series, and under such circumstances the practitioner is ready to grasp at anything that seems to offer any chance of success. He has used nearly every form of medication that has been recommended, and has never yet found any remedy that proved to be a specific for diphtheria. In the first stages he has found calomel extremely beneficial, but cannot agree with the theory that it does not produce the characteristic stools in cases of diphtheria. It is his rule to push its administration until such stools do appear, and it may then be diminished, discontinued, or replaced by the bichloride of mercury. As a solvent to the membrane, no application has been so uniformly useful and reliable as the peroxide of hydrogen, and having this remedy, he can conceive of no reason for using other local applications which are much less efficient.

In regard to the operative treatment of laryngeal stenosis, he said that his personal experience with tracheotomy has been disastrous. In his own operations and in the many at which he has assisted, he has never seen a case of tracheotomy for diphtheria recover. Intubation has given him much more satisfactory results, since in a total of fifteen operations he has had five recoveries.

Dr. H. B. Whitney said that the cause of diphtheria is now generally conceded to be the bacillus first described by Klebs and afterward by Löffler. It has been found that inoculation of this bacillus in animals will invariably cause diphtheria. Some recent investigations seem to show that the constitutional symptoms are due not to the bacilli themselves, since these cannot exist in the blood, but to some of their products, which are not, however, ptomaïnes, but closely analogous to proteids. The injection of these proteid products almost uniformly produces the constitutional symptoms of diphtheria, without, however, causing any formation of membrane.

Dr. Rogers was very strongly inclined to believe in the existence of croup and diphtheria as entirely separate disease-processes. Membranous croup is certainly not contagious as is diphtheria, and in illustration of this fact he cited the following incident: A case of croup in a large asylum was, upon the advice of the visiting medical staff, allowed to remain in the centre of the ward with the other children, no precautions being taken to prevent contact. There were no new cases either of croup or of diphtheria. He believed that such instances prove the non-contagiousness of croup.

Dr. Pfieffer described a case in which a temperature of 103°, pulse of 160, and respiration of 40, with a coincident endocardial murmur seemed to indicate an idiopathic endocarditis, but twenty-four hours later a diphtheritic membrane made its appearance in the throat. This case he regarded as one in which the disease was primarily constitutional, the membrane in the throat being a secondary manifestation.

He also described a case of croup in which he performed tracheotomy, and which came very near terminating fatally on account of extension of the membrane below the end of the tracheal tube. He believes in the employment of longer tubes than those generally employed, and thinks that their use would save many

lives, by giving the patient the chance afforded by the self-limitation of the membrane after it has proceeded a certain distance in the trachea.

Dr. N. Weist called attention to the efficacy of peroxide of hydrogen as a solvent and antiseptic, claiming that its use renders unnecessary the employment of sprays of corrosive sublimate. He asked for the experience of others in reference to suppuration of lymphatic glands, since his personal experience has been that it is infrequent.

Dr. Bryant said that in several epidemics he had seen suppuration comparatively frequently—in about 10 per cent. of cases. He called attention to the value of chloride of iron as a local application. It is an important point to bear in mind that strong local applications may destroy the healthy mucous surface and give an opportunity for extension of the membrane. Indeed, in at least one epidemic under his observation he believes that the high mortality-rate was perhaps due to the universal application of concentrated solutions to the whole surface of the fauces.

Dr. J. T. Eskridge had seen a number of cases of multiple neuritis following diphtheria, and thinks that many of the cases of heart-failure in this disease are due to degeneration of the cardiac nerves.

Dr. John Elsner called attention to the value of ferric alum as an application to the membrane, especially if the case is seen early. The solution must be carefully applied by means of a pledget of cotton, to the membrane only. Under this treatment, repeated, if necessary, every three hours, the membrane becomes gray or black, shrivels up, and disappears, and the disease is aborted. This treatment he prefers to all others, and has had his experience confirmed by many others, among them Abraham Jacobi, of New York.

Drs. McLauthlin, Bryant, and Eskridge cited cases of children who had attended school during the whole course of an attack of diphtheria, both themselves and their parents being ignorant of the nature of the illness. In one case the fact of diphtheria having existed was elicited only after the occurrence of paralytic symptoms. These gentlemen urged the importance of having schools supervised or inspected in some manner, so that such occurrences should cease.

Dr. McLauthlin dwelt on the importance of reporting all cases of croup to the health authorities.

Dr. Shallenberger emphasized the relationship of croup and diphtheria, and spoke of the necessity of guarding against infection in all cases of croup, as though they were proven to be diphtheria. He reported a case alleged to be croup which died under the care of another physician, but within a week three adults came under his care with every characteristic symptom of diphtheria.

TWO UNUSUAL DISLOCATIONS.

By JOHN T. DAVISON, M D.,
of Sopris, Colorado.

Dislocation of the fifth metatarsal bone from both attachments.—J. C., a laborer, employed about the mouth of a mine in "making up the trip," while running to turn a switch, slipped and fell, one or two wheels of a loaded pit-car, which weighed three tons, passing over the dorsum of his right foot. When seen a few minutes afterward, the foot was greatly flattened. There was a tumor, almost cylindrical in shape, on the outer side, where the skin was tensely drawn over the bone; there was also a penetrating wound on the inner side just below the malleolus, and, probably, from the great weight acting upon so limited a surface, much subcutaneous bruising, if not rupture, of the tissues had taken place. The dislocation was immediately reduced by seizing the toes with one hand, making traction in the line of foot, and, with the other hand, pressing the bone into place, crepitus being appreciable. There was much swelling, accompanied by great pain. After the partial subsidence of swelling and pain, hot foot-baths twice daily, followed by a snug bandage, and, later, by inunction with neat's-foot oil, was the treatment pursued. About six weeks after the accident, while walking upon crutches, the patient slipped and fell, injuring the foot again, and doubtless retarding recovery. He is now, two months after the original injury, able to bear his weight partly upon the foot without artificial support; there still being considerable tenderness. Beyond slight swelling and discoloration, the foot presents a natural appearance. The patient will probably soon make a good recovery.

Compound dislocation of the ankle-joint, with eversion and backward displacement of foot.—Following the classification recommended by Stimson, I consider this title better calculated to convey an idea of the trauma than is the title "compound Pott's fracture"; for, although the fibula was broken at the usual point above the ankle-joint, the tibia presented none of the lesions characteristic of Pott's fracture.

Mrs. S., aged about forty-five years, quite fleshy, yet withal active, and of good vitality, while visiting Mine No. 4 at Sopris, September 20, 1890, was thrown from a wagon. She alighted upon her feet in such a manner that the distal extremity of the left tibia was forced through the flesh a distance of four inches; and also through the side of her shoe. She was seen at a neighbor's house forty-five minutes after the accident. I found her lying on a sofa, and not suffering as intensely as might be expected from such an injury. As she would not submit to etherization until her husband arrived, I contented myself with giving morphine hypodermically, cutting away the remnants of shoe and stocking, and thoroughly irrigating the protruding bone and the limb with bichloride solution (1 to 2000). The foot and lower part of her leg were finally wrapped in a towel moistened with a 1-to-1000 bichloride solution.

Upon the arrival of her husband she was etherized, and a more thorough examination was made than was possible before. The tibia was found intact, save at the extremity, where it had come in contact with the ground, the dense tissue being abraded in two or three places, exposing the cancellous structure beneath. The interarticular fibro-cartilage was attached to the end. There was a slight rent

in the periosteum, and two or three spiculæ of bone were adherent by the shreds of periosteum where the bone was abraded. As stated in the title, the foot was everted, and turned backward to a considerable extent. The small amount of soft tissue about the ankle was strikingly shown in this case, the foot appearing to hang by a shred. The dislocation was easily reduced by making traction on the foot, and carrying the foot first outward, and then, as the wound of exit came opposite the end of the tibia, inward. Previously to this, however, the little fragments of bone were snipped from their periosteal attachments. The wound of exit, as it appeared with the bone in place, was about one and one-half inches in length, and at a right angle to the shaft of the tibia. Three interrupted sutures were inserted, leaving the lower part of the wound open for drainage. The wound was covered with iodoform, and a saturated solution of naphthalin in ether, as recommended by F. S. Dennis, was poured over a considerable extent of the adjacent surface. Iodoform, bichloride gauze, and bichloride cotton were applied in the usual manner, and the limb immobilized with pasteboard splints, which completed the surgical treatment at this time.

This dressing was allowed to remain twelve days, during which time the temperature presented nothing remarkable, once rising to 102°, but subsiding after giving a purgative, and not rising thereafter above 100⅕°. There was very slight swelling about the wound, and none of the leg and foot. When the dressing was removed granulations in abundance were seen. There were a few drops of pus, probably from a stitch-abscess, as the slight amount of tension sufficed to cause local inflammation of the skin. She was removed to her home in Trinidad two weeks after the accident, and further treatment of the case was continued by Dr. D. G. Thompson, who applied the necessary dressings. The wound healed rapidly, so that passive motion was commenced within a month or six weeks after the injury.

Dr. Thompson, whom, I should state, assisted me at the time of the accident, tells me that three months after the dislocation she had good use of her ankle, and could bear her weight upon the foot, but was still too timid to attempt walking without support of some kind. I have reported this case in considerable detail in order to add a little to the not extensive literature upon the treatment of compound dislocations of the larger joints. The case exemplifies the good results obtained from close attention to asepsis and antisepsis.

A CLINICAL STUDY OF ERGOT.

BY JOHN C. HEMMETER, PH.D., M.B., M.D.,
OF BALTIMORE.

IN a period of medical history when new therapeutic agents are rushed upon us in an abundance which seems out of all proportion to any real increase in our knowledge of the scientific application of drugs, or to any real advancement in experimental therapeutics, a critical combination of facts which have been established in the laboratory and in the hospital concerning ergot may aid in throwing new light on the value and possibilities of one of the oldest drugs in the pharmacopœia.

The therapeutic effects of few drugs correspond so closely with their physiological action as do those of ergot. The following summary of the physiological effects of this substance shows this statement to be true:

I. Ergot causes contraction of involuntary muscular fibre throughout the body. Consequently it produces:

(*a*) Increased uterine contractions.

(*b*) Increased intestinal peristalsis.

(*c*) Constriction of the muscular walls of the arterioles.

(*a*) Very probably, constriction of the involuntary muscle-fibres surrounding the bronchioles.

II. As a result of the constriction of the arteries, ergot causes a rise of arterial pressure. A brief, temporary lowering of pressure preceding the rise, when the drug is injected into the jugular vein, is due to its local poisonous action on the heart (muscular fibre or ganglia).

III. It reduces the number of contractions of the heart in a given time.

IV. The respiratory movements are decreased in number in most animals, including man; in the dog they are increased.

V. It lowers temperature.

VI. The irritability of the peripheral motor nerves is increased, independently of the central organs.[1]

VII. The irritability of the peripheral sensory nerves is diminished, hence reflex excitability is diminished.[2]

VIII. With the retardation of the pulse-beat the height of the pulse-curve is not reduced; in all of our kymographion tracings the altitude of the pulse-curve was unaltered, though the number of systolic contractions were reduced. (This is in agreement with Köhler's and Eberty's results, and opposed to those of Bailly, Hardy, Beatly, and Bonjean.)

IX. Secale reduces the pulse-rate.

Upon the power of ergot to constrict the arterioles and to cause arterial and capillary anæmia depends its application in a large number of disease-conditions. It has been successfully used in hæmoptysis, hæmatemesis, epistaxis, hæmorrhage from the gums; renal, hæmorrhoidal, and vesical hæmorrhage; in the bleeding caused by carcinoma; and in hæmorrhage dependent upon a dyscrasia, as purpura hæmorrhagica. In menorrhagia and

[1] Köhler, Virchow's Archives, lx., 1874.
[2] Köhler, loc. cit.

leucorrhœa, which are produced in certain cases by endometrial congestion; in colliquative sweating due to relaxation of cutaneous capillaries; in enlargement of the spleen and in vascular goitre it has been found of value. Langenbeck[1] instituted a successful treatment of aneurism by secale, and was followed by Dr. Paul Vogt,[2] who states that Schneider cured a femoral aneurism, and Dutoit one of the subclavian artery, with this drug.

Ergot has also been advantageously used in congestive headaches and in impaired vision from congestion of the retina incident to dilated or hypertrophied heart. Intestinal catarrh with diarrhœa, due to congestion of the intestinal mucous membrane, is a special indication for the use of ergot. It has proven itself to be very useful in dysentery and in galactorrhœa. The power of ergot to contract the uterus has been utilized to remove uterine fibroids, by strangling their vascular supply and by causing uterine contraction. There is good authority for crediting it with a beneficial influence over cervicitis, pharyngitis, and even gonorrhœa, and over paralysis of the bladder from distention, or in that due to cerebral or spinal lesion.

The theory of its action is based upon the artificial anæmia which it induces in the arterial vessels, so that the histological process of inflammation is impeded.

In small aneurisms of the peripheral main arterial trunks, Langenbeck held that the drug brought about a cure by contraction of the unstriped muscular fibres in the affected portion of the vessel. We have reason to believe from studies on the rabbit's omentum, and on the frog's web, that the characteristic effect of ergot in constricting blood-vessels and producing arterial, capillary, and venous anæmia is exercised most markedly in those regions which are diseased. The arterioles in the neighborhood of a region undergoing changes coincident with the first stage of inflammation, will be found, micrometrically, to undergo greater degrees of constriction than those in normal regions. Arterioles that are pathologically enlarged seem to require less stimulus to contract than normal ones, because the natural tendency of an expanded muscular coat of an artery is to resume the average lumen which it occupies during normal arterial tension. We therefore have a right to conclude that when ergot is given to a patient suffering from an acute localized inflammation—pneumonia, for instance—its main influence is exercised upon the parts pathologically altered, while those parts of the circulation in which normal arterial tonus has been maintained are but slightly affected.

In most nervous diseases ergot is of doubtful efficacy, except in those forms in which symptoms and signs indicate hyperæmia and congestion of the spinal or cranial meninges, or an acute inflammation of the cord-substance.

In the treatment of the psychoses, in which ophthalmoscopic examination justifies us in diagnosing intra-cranial congestion and, perhaps, inflammation, ergot has proved to be a valuable adjunct to other methods of treatment. The same can be said of its use in certain forms of epilepsy. In locomotor ataxia and diabetes mellitus, ergot has, in our experience, failed to relieve.

The property of diminishing the irritability of the peripheral sensory nerves and the consequent reduction of reflex action, has, according to Köhler[1] been utilized in the treatment of diseases in which the reflex excitability is greatly increased, as in chorea, and certain forms of epilepsy and tetanus.

Although these influences of ergot over peripheral sensory nerves have *per se* little therapeutic utility, they become important in connection with the other well-established effects of the drug. In all acute inflammations, with high fever, rapid pulse, hurried respiration, and congestion, if we can employ a drug which will allay these symptoms and at the same time lower reflex excitability, it is most desirable to do so. The power of ergot to reduce temperature, the number of pulse-beats, the number of respirations, and at the same time maintain increased arterial-pressure, makes it a most important agent in the management of certain conditions in pneumonia.

We shall now proceed to record a series of personal observations (excepting those referring to the obstetric employment of ergot) on the indications for the use of secale and its positive or negative results in the following diseases and conditions:

Labor, pneumonia, bronchitis, hæmoptysis, dysentery, mitral regurgitation, aortic insufficiency, dilatation of the heart, goitre, meningitis, epilepsy, locomotor ataxia, hemicrania, and diabetes mellitus.

ERGOT IN LABOR.—It would require the pen of an experienced obstetrician to do justice to the subject of the use of ergot in labor, but it has been thought expedient to give the drift of opinion as expressed in the literature on the subject since 1878. In these records it appears that the experience of the most authentic authors has not changed the rules for administering ergot in labor since they were first systematically collated by Köhler[2] and copied into most standard works on therapy. These indications are:

I. In lingering labors when the child's head is low, the parts relaxed, the pains absent or feeble, and there is danger in delay from hæmorrhage or other alarming symptoms.

[1] Berlin. klin. Wochenschrift, 1860, vol. vi.
[2] Ibid., March, 1872.

[1] Physiol. Therapeutik, p. 207. [2] Physiol. Therapeutik.

II. When the pains are suspended and convulsions set in, venesection being necessary.

III. In inevitable abortion.

IV. When the placenta is retained, owing to uterine inertia.

V. In post-partum hæmorrhage.

Disease of the uterus, deformity of the pelvis or spine, and similar conditions, forbid its use. Even resistance of the soft parts, as may be anticipated in a primipara, contra-indicates the use of the drug. It has been accused of causing rupture of the uterus, but this is doubtful.[1] The manner of action of ergot upon the uterus in labor is claimed by some to be unlike that of the natural forces. The natural contractions are intermittent and rhythmical, while those under ergot are constant, steady, and, as it were, tetanic, tending to destroy the child by interrupting the placental blood-supply and impeding the fœtal circulation, for the life of the fœtus depends upon the aëration of the blood during the intervals between the expulsive contractions. If it were true that the contractions under ergot were tetanic and without remissions, the respiration of the fœtus would be stopped and its life imperilled. We shall, however, present satisfactory experimental and clinical evidence, on very good authority, that the contractions of the uterus produced by ergot are in every particular normal and not tetanic. Before we proceed to this evidence we may consider the objection to the employment of secale on the grounds that the drug circulating in the maternal blood becomes dangerous to the heart of the child,[2] reducing the number of its beats to 110 or less, and rendering the heart's action feeble and irregular.[3] It is Köhler's[4] opinion that in such cases the dose of the drug has been excessively large, its administration undertaken too early and before the parts were prepared for the expulsion of the child. On the other hand, Garraway[5] resuscitated, by giving ergotin, a newborn babe whose heart-sounds were irregular and scarcely discernible, the child being almost asphyxiated.

This suggestion of treating asphyxia in the newly-born was first made by Dépaul.[6] If any organ is stimulated to function by an irritant applied to its centre in the brain or cord, or to the nerve or nerves going from that centre to the organ, the latter responds in its normal manner, provided the stimulation be not excessive. A muscle will respond to electric stimulation of its nerve by normal contraction, but if the stimulation be too powerful a tetanic contraction is the result. These facts apply mainly to muscle physiology; in organs that give no physical evidence of responding to stimulation we are unable to arrive at similar conclusions, but in the case of the uterus, if a physiological dose of ergot is employed, the result will be normal contractive movements. Whenever tetanus results, one can safely presume that the dose has been toxic. The most recent scientific study of the use of ergot and its action in labor was contributed by Schatz to the Third German Gynecological Congress, at Freiburg.[1] The conclusions of Schatz are, in the main, as follows:

I. The contractions of the uterus, when produced by ergot, in their manner and character do not differ from the normal. Ergot produces properly coördinated contractions of the uterus, provided large doses have not been given, and, hence, most probably acts by direct stimulation of the centre for uterine contraction.

II. In case the contractions are already present, ergot increases their number, but does not render them stronger. The intensity of the force of the contractions is influenced only in proportion to their frequency.

III. As a general rule, in normal labor the force is greatest when the frequency of the contractions is from six to ten in thirty minutes. One should, in the employment of ergot, seek to maintain this frequency and not allow it to exceed ten contractions in thirty minutes.

IV. The action of secale begins fifteen minutes after its administration by the mouth, and is greatest in thirty minutes. One can, therefore, judge of the effect of a dose of the drug only after the second half-hour after it has been given, and should under no circumstances administer it oftener than once in an hour, if one wishes to avoid the risk of producing too frequent and consequently too weak contractions by cumulative action, or of causing uterine tetanus.

V. The effects of a dose last for one hour only, and the drug must, therefore, be repeated hourly. As a general rule, the proper dose to give is a very small one if uterine action has already begun. In order to be sure of avoiding too great a frequency of contraction with all its detrimental effects, it is necessary to begin with from 8 to 10 drops of the fluid extract, for instance,[2] and to increase it with great care, repeating its use not sooner than one hour after the preceding dose.

The deductions of Schatz show much careful observation, and his facts are handled with scientific acumen. His experimental results were obtained by means of the tokodynamometer.

Recent testimony regarding the power of ergot

[1] See Stillé's Therapeutics, second edition, vol. ii. p. 501.
[2] Hardy: Dublin Journ. of Med., xxvii. 225.
[3] McClintock: Dublin Quart. Journ., May, 1865.
[4] Loc. cit.
[5] British Medical Journ., February 3, 1864, p. 176.
[6] Bull. de l'Acad., x. 565.

[1] See also Schatz, Arch. für Gyn., Bd. 35, H. 3.
[2] Pharm. Germania.

to cause abortion seems to be divided. If the mother and fœtus are healthy and other irritants are excluded, it is presumed that ergot will not *per se* induce abortion. The expansion of the uterus during gestation is a purely physiological process; ergot, therefore, as a rule, fails when used for criminal purposes (Wright and Bonjean). In pregnant animals, however, abortion seems easily induced by ergot.[1] Ramsbotham[2] found, after numerous trials, that ergot, with few exceptions, promptly induces expulsive action in the human female. On the whole, the abortifacient influence of ergot seems uncertain.[3] It is certain, however, that one of the principal phenomena of ergotism in both animals and the human being is frequent abortion, so that this result will have to be classed with the toxic effects of the drug.

Ergot in Pneumonia.—Dr. N. S. Davis contributed to the *Journal of the American Medical Association*[4] a clinical report of two cases of pneumonia in which certain alarming features of the disease were effectually relieved by the use of ergot. After remarking that there is no fixed rule or routine of treatment which is adapted to all cases of pneumonia, simply because the morbid processes which constitute the different stages of pneumonic inflammation are liable to be much modified by the previous condition of the patient and the coincident meteorological and sanitary influences that surround him, he designates the benefits to be derived from ergot. When there is a demand for more steadiness and tone in the action of the heart, he asserts that if given in connection with digitalis it is perhaps the most reliable agent that we possess for resisting the over-engorgement of the pulmonary vessels during the first stage of the disease in which this condition of the heart is found to exist. The first case Dr. N. S. Davis reports appeared at first to be an uncomplicated case of catarrhal pneumonia. "No alarming symptoms occurred until the end of the second day, when the exudation began to increase with such rapidity that before the middle of the third day the left lung was completely engorged and dull on percussion from the apex to its base, and there was commencing crepitation in the lower part of the right. Pulse 120 per minute; temperature 103° F. The breathing was oppressed, short, and frequent, with mucous râles rapidly increasing in the larger bronchi. The expectoration was copious, thin, and very bloody. It became evident that before the end of another day, at the same rate of progress, both lungs would be completely filled with exudation and the patient suffocated. Professor Davis directed in consultation 3 grains of ergotin every two hours; also, 2 grains of quinine and $\frac{1}{30}$ grain of strychnine every four hours in addition to 10 minims of tincture of digitalis with aromatic spirit of ammonia alternating with the ergotine. A blister, followed by emollient poultices, was also applied. Under this treatment the aspect of the case was changed in twenty-four hours; the respirations became slower and deeper, the pulse was 108 and more full, the coarse râles were fewer in number, and the bloody expectoration diminished one-half. The patient made an unusually rapid recovery.

The second case presented a similar clinical picture; the treatment was the same, with the exception of the digitalis. It seems, however, that this second case may have received too much of the drug, at least the singular occurrence of a collapsed condition of the circulation and entire cutaneous relaxation, the skin being cold and wet with perspiration, and the pulse hardly perceptible at the wrist, may have been a reaction from the toxic effect of ergot. To restore the tone of the cutaneous vessels and increase the force of the heart's action give digitalis, belladonna, and aromatic spirit of ammonia. When one has used ergot, digitalis, ammonia, quinine, and strychnine to combat a rapidly-spreading pneumonic exudation, it becomes a matter of difficulty to decide to which drug the effect of checking the process is due, and although we are able to sift out the action of ergot in the case of Dr. Davis's admirable account, this objection to the accuracy of the deductions is a plausible one.

In the two cases, one of catarrhal and one of croupous pneumonia, with an exudation filling up the entire left lung, and with coarse moist râles throughout the left lung, ergotole was employed, the clinical chart which follows being a record of the latter. The expectoration in both cases was profuse, thin, and contained an abundance of blood. From the time that the infiltration first became manifest by unmistakable physical signs, with rapid, weak pulse, hurried respiration, and high fever, the patients were put upon ergotole 15 minims in half an ounce of whiskey every two hours. Although a number of other remedies were kept at hand to be used hypodermically, should occasion arise, none them was made use of. These two cases of pneumonia were treated exclusively with ergotole and good nourishment, and both made a speedy recovery. In these cases we are warranted in believing that the ergot in itself had a specific influence over the progress of the exudation, for no such effect could reasonably be attributed to the whiskey which was taken. After the fever had subsided and the pulse

[1] Diez, Oslere, Percy, and Laurent in Stillé's Therapeutics, 2d ed., vol ii. p. 585.

[2] Principles and Practice of Obstetrical Medicine and Surgery, Philadelphia, 1860, p. 318.

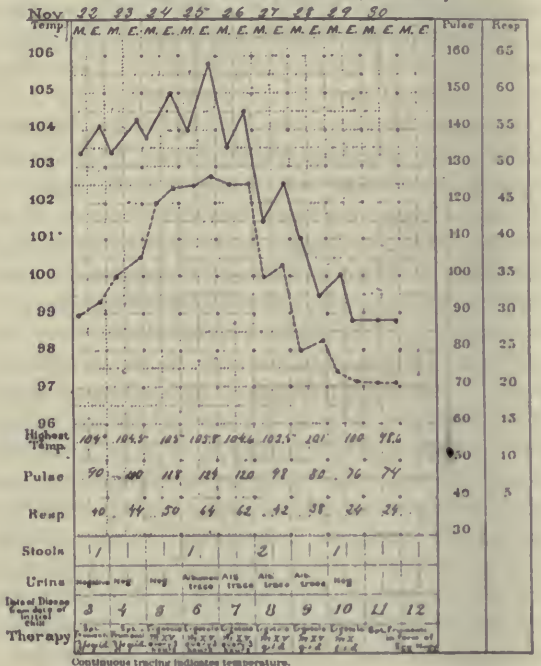
[3] Taylor: Principles and Practice of Medical Jurisprudence, vol. ii. p. 193.

[4] 1884, vol. ii. No. 14, p. 369.

was almost normal, both cases were put on tonic mixtures containing iron, quinine, and strychnine.

Dr. Sunol[1] shows that the action of ergot on unstriped muscular fibre may also be of use in various acute affections of the respiratory apparatus. Thus, in intense acute bronchitis, when there is difficulty of expectoration it serves a useful purpose in emptying the bloodvessels and contracting the bronchial muscles.

Record of Temperature, Pulse, Respirations, etc., of a case of CROUPOUS PNEUMONIA treated with Diet and Ergot exclusively.



Continuous tracing indicates temperature.
Dotted tracing indicates pulse.

Sunol has used ergot successfully in the congestive stages of pneumonia, and very accurately recorded the physiological effects. He states that the breathing becomes slower and easier, the temperature falls, the expectoration becomes free and much diminished in amount. In pulmonary engorgement, he urges that ergot should take the place of bleeding.

It appears from the foregoing, that the indications for the employment of ergot in pneumonia are symptomatic; the special characteristic and tendency must be in each case carefully studied, and the drug promptly administered when we are certain of pathological changes which we know the physiological effects of the drug will effectually counteract.

According to A. L. Loomis,[2] it is still a disputed question whether the bronchial or the pulmonary capillaries are the chief source of pulmonic exudation. The lung-tissue is nourished by the blood in the ramifications of the bronchial arteries, while the capillaries of the pulmonary arteries and veins are the passive media for the interchange of gases. Hence, it has been claimed that the bronchial capillaries only are implicated in the inflammatory process. Virchow has shown that the pneumonic process can be completely established in places where the pulmonic capillaries cannot be traced on account of the plugging of a large branch of the pulmonary artery.[1] He concedes, however, that the capillaries of the pulmonary artery and vein are secondarily actively concerned in the inflammatory process. On the other hand, it has been claimed that in the early stage of the pneumonic process the parts that are supplied by the bronchial capillaries are not reddened or injected as they would be were these vessels primarily concerned in the inflammatory process. It is probable that both sets of vessels are involved, but that at the beginning one set is implicated to a greater degree than the other. We will dwell on this matter to some extent under the heading of hæmoptysis.

During the course of any inflammatory process there is a period when transudates are formed. The swelling which occurs in the inflamed area may be regarded as a macroscopic evidence of the process of transudation. We learn from R. Klemensiewicz[2] that a large number of experimental facts support these assertions. The first stage of pneumonia, in which at times alarmingly rapid transudation occurs, often cannot be differentiated from the symptoms of pulmonary congestion and œdema, and is a process in which the blood plasma, and later on the corpuscular elements of the blood, pass from the interior of the bloodvessels to the surrounding spaces. The difference in the specific gravity of the constituents of the blood and the condensation of the axial part of the blood stream explain, according to Schklarewsky,[3] why the plasma escapes first and the corpuscles later on. During the process of exudation the so-called Poiseull space disappears in the vessels, and the corpuscular elements appear adjacent to the vessel wall.[4]

The vessels are, at the beginning of the transudation, only moderately filled with corpuscles, but as the process goes on the vessels become packed with corpuscles and the velocity of the blood current becomes much slower. Glax and Klemensiewicz have shown that a current is possible and does occur in the artery of an inflamed vessel after complete stagnation has occurred in the capillaries and veins connected with it. This is the only possible ex-

[1] London Medical Record, December 15, 1884.
[2] Amer. Syst. Pract. Med., vol. iii. p. 308.

[1] Gesammte Abhandlungen, p. 369.
[2] Fundamental Versuche über Transudation, Graz., 1883.
[3] Schklarewsky: Pflüger's Archiv, Bd. i. pp. 603 and 657.
[4] Rynek: Zur Kenntniss der Stase des Blutes in den Gefässen entzundeter Theile.

planation for this phenomenon. The liquid constituents find an exit from the interior of the vessels into the space surrounding them by lateral openings which exist in the walls of the vessels themselves. The capillaries possess permeable walls. The permeability of the vascular walls is, however, not confined to the capillaries, for to a greater or less degree the walls of the smaller arteries and veins possess this property of permeability. The permeability of vascular walls varies according to their location; that is, exudation will occur to a greater extent in loose than in dense tissue. The permeability increases in the larger arteries toward the veins and as the blood-pressure decreases. The onset of transudation is coincident with the pathological change in the vessel wall, and it is this change, and not an increase in pressure, which causes the exudation in pneumonia.

We believe that ergot exercises a very decided effect upon the pulmonary vessels.

Transudation has been proved, by a very large number of observers, to depend mainly upon the permeability and elastic distensibility of the blood-vessels.

If the reader will consider these facts for a moment, and then think of the physiological action of ergot, he cannot fail to realize what a powerful agent this drug is in checking inflammatory exudation, as clinical experience has undoubtedly proven it to be in the first stage of pneumonia. If transudation depends upon the permeability and elastic distensibility of the vessels, we know that ergot, by constricting these, can reduce peri-vascular engorgement.

If transudation is associated with increased heart's action, we know that ergot reduces the number of heart-beats.

If the beginning of pneumonic exudation is associated with hurried breathing, we know that ergot reduces the number of respirations per minute.

If transudation is connected with fever, we know that ergot reduces temperature.

If the fever in inflammatory exudations lowers blood-pressure, we know that ergot raises it.

All of these physiological effects directly counteract the main features of the pathological process, and check further transudation, while the lymphatics carry away the exudation that has already occurred.

In the experimental part of this report[1] we did not mention a number of experiments which we undertook with Ludwig Stromuhr, to measure the velocity of the blood-current in the carotid artery of dogs. The velocity of the carotid current in a dog was estimated at 206 mm. in a second. Under ergot—*i. e.*, five minutes after 1.5 c.c. of ergotole in defibrinated blood had been injected into the jugular vein—the estimate of the velocity was 169 mm. in a second. The same fact was established in the case of a cat. We have here an experimental proof that the amount of blood flowing from a bleeding (torn) vessel in a given time will be less after the animal has received ergot. That the reduction was due to ergot, and not to accident, was proved in the dogs after the effect of the drug had subsided. In fifty minutes the velocity of the current in the carotid of the same animal was estimated at 200 mm. in a second; and at this time a second injection of 1.5 c.c. of ergotole, similarly diluted, was made into the jugular vein. The next estimate—taken eight minutes after this injection—showed the velocity reduced to 163 mm. in a second. Hence, we have a right to believe that ergot directly reduces the rate of the blood-flow, probably by reducing the work of the heart and opposing more resistance to the stream by constricting the unstriped muscular fibres in the vessel-walls.

(*To be concluded.*)

[1] See The Medical News, January 31st and February 7th.

A BRIEF REPORT OF FOUR MONTHS' SERVICE IN THE SURGICAL WARDS OF THE PENNSYLVANIA HOSPITAL.[1]

By THOMAS G. MORTON, M.D.,
ONE OF THE ATTENDING SURGEONS.

The following very brief review of the more important surgical work which came under my care at the Pennsylvania Hospital during my term, which represents half of the service, which has just expired (from October 1, 1890, to January 1, 1891, inclusive), may, I trust, be not without interest.

At the very outset, I will state that in all the surgical work aseptic precautions were rigidly observed, as heretofore. In quite a number of cases this was rendered difficult from the fact that patients not infrequently were brought from a distance with their wounds already dressed, perhaps hours before arriving at the hospital. In some instances wounds, which apparently had been carefully dressed, were found, upon examination, to be impregnated with coal-dust or other extraneous matter. In all such cases the rule was observed to reopen, examine, and redress the wounds.

One interesting example of this kind was admitted from the coal regions in November. The patient was a miner, whose thigh was crushed by falling coal. His wounds had been dressed by a neighboring surgeon at the time of the accident, and he

[1] Read before the Philadelphia Academy of Surgery, February, 1891.

was not brought to the hospital until thirty-six hours afterward. The external wound, which was extensive, and had been carefully and tightly sutured, was reopened, when it was found that there had been complete division of all the muscles on the posterior part of the middle of the thigh, exposing the sciatic nerve and the femur; numerous particles of coal and other foreign matter were found in the tissues and elsewhere. The wound was then thoroughly cleansed, and the divided muscles carefully approximated and closely sutured, which was followed by prompt healing, the patient recovering with good flexion and extension.

It is worthy of comment that during this term of service there was not a single case of erysipelas, septicæmia, or tetanus, no secondary hæmorrhage or other complication following any major operation, and but two deaths following operations. One of these occurred after an abdominal section, which will again be referred to; the other fatal result followed an amputation of the thigh, crushed in a railroad accident. On account of extreme shock from the injury and loss of blood from the femoral artery, which had been torn, it was impossible to operate until twenty-four hours after the accident. Death followed from recurring shock.

Amputations and wounds incident to operation or injury invariably healed by first intention; indeed, suppuration occurred only in such cases as perineal section, suprapubic cystotomy, etc., in which the wound could only close by granulation. In one case of perineal section several hæmorrhages occurred, but it was subsequently ascertained that the patient had always been of a markedly hæmorrhagic diathesis. He afterward made a good recovery.

The strength of the mercuric solutions for irrigation was uniformly 1 to 1000, and for the wet dressings 1 to 2000; in case of young children this was reduced to 1 to 2000 and 1 to 4000, respectively.

Whenever possible, the region of operation was cleansed on the previous day, or even earlier, and the parts were carefully protected by towels wrung out of the bichloride solutions. In no case was there toxic effect from the absorption of the bichloride solutions, or irritation from its application, on the body of the patient or hands of the attendants.

As a dusting powder, "aristol" was used almost exclusively; it is probably a germicide, and does not produce irritation, while its freedom from odor is in its favor. It seems to be more efficient and in every way superior to iodoform.

In all cases catgut was used for ligating arteries, for approximating bone-surfaces after resection, etc., for closing and for draining wounds, and even for the drainage after amputations. Rubber drainage-tubes were used in operations in the chest cavity, and glass tubes for the abdominal sections. Silk was employed for suturing the intestines and closing wounds after operation.

In the treatment of "shock" strychnine was administered hypodermically, and gave excellent results, in doses of from $\frac{1}{60}$ to $\frac{1}{30}$ of a grain repeated about every half-hour.

In the treatment of fractures I have nothing new to report. The dressings were always of the most simple kind; the fracture-box, which was often suspended, was used for fractures of the legs; extension with lateral support by the sand-bags for the femur, and after union had occurred moulded pasteboard, silicate of sodium, or plaster dressings were applied. In fractures of the humerus, moulded pasteboard splints were employed externally, the chest-wall being utilized in many cases for the internal splint; the right-angled splint was all that was required in many cases.

Fractures of the lower end of the radius required no special form of splint, the complete and immediate reduction of all displaced fragments making the treatment very simple.

In explanation of the comparatively small number of fractures during a winter term of service, and especially of the small number of the upper extremities, it should be stated that a very large number of fractures coming to the hospital were dressed in the receiving ward, and then sent to the out-department. Only the more serious of such injuries were received in the wards. One hundred and four cases of fracture were taken into the hospital. Of these, sixty-nine were *simple fractures*—sixteen of the femur, and twenty-three of the tibia and fibula, the remaining number included the patella, scapula (one due to muscular violence), ribs, pelvis, vertebræ (spinous processes only), and upper extremities. Thirty-five were compound fractures—six of these involving the femur, five the tibia and fibula, twelve the skull, and twelve the upper extremities.

Operations.—Five compound depressed fractures of the skull required trephining; the wounds closed by immediate union, and without any subsequent symptoms. In trephining, when possible, especially when the scalp wound is of considerable extent, I prefer not to use an anæsthetic.

Of thirteen amputations, three were amputations of the thigh, three of the leg, and seven of the arm, forearm, and foot. All recovered, except one case of thigh amputation, already referred to.

Seven laparotomies were performed.

One case of purulent peritonitis, apparently idiopathic from its rapid course, seems worthy of record.

Emil L., about fifty years of age, living about seventy miles from Philadelphia, had occasional slight attacks of abdominal pain during the pre-

ceding four or five years, but had never had any serious illness. Present attack came on about eight hours before admission. He had been hard at work during the morning, cutting and hauling ice; at noon he rode to his home on a load of ice, and ate heartily of pork and cabbage. Pain came on suddenly, and he took a train for his son's home in Philadelphia. Arriving in great distress, he was brought to the hospital, and was admitted to the medical ward about eight o'clock the same evening. He was not improved by treatment. Toward noon on the following day his temperature had fallen to 97.4°, pulse and respiration increased, and a fatal termination seemed inevitable; sixteen hours after admission the case was transferred to the surgical ward by Dr. Da Costa. An exploratory abdominal incision revealed the presence of purulent peritonitis; the bowels were covered with recent flaky lymph, and the belly-cavity contained pus. The appendix was examined and found normal, and no local cause for the disease could be discovered.

The patient died five hours after the operation. A post-mortem examination could not be obtained.

Two of the cases of abdominal section for removal of the appendix vermiformis seem worthy of record; the first was that of a pericæcal abscess. The history of the case is as follows:

George I., aged thirty years, was admitted May 12, 1890, in a prostrated condition, and with a history of pericæcal inflammation, followed by symptoms indicating perforation of the appendix and abscess.

The attack came on suddenly with pain in the region of the appendix, which was greatly increased by pressure; there were nausea, fever, and constipation. Later, there was a sudden accession of intense pain, with deep swelling, general abdominal tenderness and tympany. The temperature was fluctuating and there were chills and profuse sweating. The skin over the ileo-cæcal region became discolored and somewhat œdematous, but no distinct tumor could be felt at any time, yet there was a hardness of the deep tissues. Such were the conditions on admission. A lateral incision was made directly over the region of the appendix, and a large abscess cavity containing fœtid pus was exposed; careful search failed to discover the appendix, but the surrounding organs were so matted together by adhesions, that further exploration was not deemed prudent. It was supposed that the appendix had been destroyed by the violence of the inflammation, which had probably resulted in gangrene of the organ.

The abscess and abdominal cavity were thoroughly washed and two drainage-tubes were inserted, one of glass to the bottom of the pelvic cavity, the other of rubber into the most dependent part of the abscess cavity.

A rapid recovery followed, but a fistulous opening remained, which now and then discharged excrementitious matter, showing that an opening existed in the intestine, which was probably at the site of the appendix.

In October a second section was made directly in the line of the first operation, for the purpose of closing the fistula. On reaching the cæcum, it was found that all the adhesions which were present at the first operation had been completely removed. The cæcum could be readily manipulated, and was found open, as expected, at the site of the appendix, which had unquestionably sloughed off, leaving a fistula of sufficient size to admit the end of the little finger.

The fistula was closed with nine Lembert sutures. Rapid and perfect recovery followed.

The history of the second case is as follows:

Mrs. E. S., aged forty-six years, was admitted January 5, 1891, with symptoms of appendicitis, which had existed for a week. There had been considerable pain, with elevation of temperature, abdominal distention, constipation, furred tongue, and vomiting. Directly over the ileo-cæcal region a tumor was discovered which was movable and exceedingly painful upon pressure. There had been neither chill nor sweating. The symptoms pointed to irritation or inflammation of the appendix, or of the peri-cæcal region, but not to abscess. A lateral section was made on the eighth day. Upon entering the abdominal cavity, the tumor proved to be an immensely elongated and distended gall-bladder about five inches in length, lying directly over the appendix. A careful examination failed to show the presence of gall-stones. The appendix was found inflamed and thickened but quite free from adhesions. The mesentery and appendix were ligatured and cut away. The stump of the latter was then inverted and invaginated into the cæcal cavity. The peritoneum was brought together over the inverted stump by five Lembert sutures. No drainage-tube was used, and the wound was closed with a few sutures.

The patient left the hospital on the twenty-first day in good condition.

Two cases of brain abscess, one involving the cerebellum and the other one lobe of the cerebrum, are interesting from the fact that neither presented symptoms which are commonly found in such lesions.

Case I.—The patient, thirty-six years of age, was sent from the out-patient department of the Pennsylvania Hospital to the surgical ward, by Dr. Harlan, on account of an aural polypus and purulent otorrhœa. The patient presented no special symptoms during his stay in the hospital; there was only a slight rise of temperature, no chill, and apparently no motor or sensory symptoms. A few days after admission he complained of a general headache, soon became comatose, and never regained consciousness. There were no symptoms at any time indicating an abscess. Dr. Harlan also saw the patient, and agreed with me in this opinion.

The autopsy showed serious disease of the petrous portion of the temporal bone; the inflammation extended from the middle to the internal ear, thence through the internal auditory meatus to the cere-

bellum by continuity, where a large abscess was found.

CASE II.—A man, aged twenty-four years, was admitted to the medical ward. He had been working as a night brakeman on the Reading Railroad until early in the morning of the day that he was brought to the hospital. He went to his bedroom that morning, and was not seen until evening, when he was found unconscious. When brought to the hospital his pulse was slow but regular, pupils equal, respirations full and deep, and limbs rigid, but there was no paralysis.

His companions stated that he had never complained, had always performed his work, and that he had appeared in good health up to the time when he was found unconscious.

The autopsy showed a very large abscess in the anterior lobe of the cerebrum, greatly distended by recent hæmorrhage, which had caused sudden death.

Ten dislocations were treated, of which two were dorsal luxations of the hip, while the others were of the humerus, clavicle, and elbow, the latter in a child, and without fracture.

Of ten gunshot wounds, there were two involving the thigh, in one case the ball passing through the penis and scrotum; four of the arm and leg; and four of the chest-cavity. One of the latter cases died soon after admission from internal hæmorrhage. Nine cases of concussion of the brain recovered.

Of miscellaneous operations there were: 1 suprapubic cystotomy (stone weighed 960 grains), 1 perinephritic abscess (opened and drained), 3 preliminary ligations of the femoral artery, 3 removals of testicles (tuberculous and syphilitic), 4 perineal sections for impermeable stricture.

There were also a number of cases of amputation of breast, removal of bony, fatty, and other tumors; strangulated hernia; repairing of cervix and perineal lacerations; fistula in ano; fissures and hæmorrhoids (the latter were all treated with the ligature); resection of the shaft of the femur, the tibia and fibula, and humerus; opening of deep and superficial abscesses, in the interior of bone and in soft parts; minor plastic operations, and resection of nerve-trunks. Taken collectively, these operations form a wide range of work. In the operative treatment of all the cases, it is gratifying to report that there were but two deaths, already referred to, both of which occurred within twenty-four hours after admission, and both presented almost fatal conditions when admitted.

DISCUSSION.

In discussing this paper, DR. J. EWING MEARS said that among the many cases presented in the report made by Dr. Morton, none possessed greater interest than the one of acute suppurative peritonitis. The history of the case—the exposure to cold after very active exercise, and, possibly, while the skin was wet with perspiration, with the imprudence in diet, as exciting causes—made the diagnosis of idiopathic peritonitis clear. While the evidence afforded by recorded cases shows that this form of peritonitis is rare, the clinical history in the present case is sufficiently distinctive. When the disease has progressed to the stage of suppuration, abdominal incision, combined with antiseptic irrigation and drainage, is the method of treatment which should be employed.

DR. J. H. PACKARD said: "My attention has lately been called to the fact that in some places, especially on the Continent of Europe, the chisel is preferred to the trephine in opening the skull. I would like to know if any of the gentlemen present have seen the chisel used in this way, and whether it is different from the one used in ordinary surgical operations?"

DR. JOHN B. DEAVER: "Dr. Morton mentions a case in which a lacerated wound of the leg was brought into the hospital in a septic condition. This is one of the troubles hospital surgeons have to contend with. The great difficulty met with in the treatment of compound fractures is that the wound is septic at the time of admission. Our ambulances should be so prepared with antiseptic appliances that, from the time the ambulance-surgeon arrives at the scene of the accident until the case reaches the hospital, the wound could be under antiseptic treatment. Our patrol system should also be so arranged that antiseptic measures could be carried out. I recall one case of compound fracture of the forearm in which septic osteomyelitis followed, and in which amputation was eventually required. Had the wound been rendered aseptic at once, there is a bare possibility that so radical an operation as amputation might have been avoided. I think it would be well if some concerted action were taken by the Fellows of the Academy relative to this point.

"Dr. Morton reports a case of rather severe hæmorrhage following perineal section. I recall a similar case which occurred during my hospital service, some two years ago. I operated for an impermeable stricture involving the membranous urethra. Consecutive hæmorrhage necessitated packing the wound. Twelve hours after the operation, I was called on account of symptoms of concealed bleeding. I found a tumor in the hypogastrium, which proved to be a blood-clot. The clot suppurated and caused septicæmia, from which the patient did not recover for three months. Here there was a decided family history of the hæmorrhagic diathesis.

"I would ask Dr. Morton how he treats fractures of the patella. Recently, I was asked to see a warm personal friend—a physician—who had fractured the patella of the right side. He also had an ununited fracture of the patella of the left side. He had sent for a surgeon, who employed a posterior splint. He asked me what I would have done under such circumstances. I declined to say anything about the case, except in consultation with the attending surgeon. A meeting was appointed, but the surgeon did not appear. I then felt at liberty to tell my friend that if it were my patella I would have it wired or have Malgaigne's hooks applied. When the surgeon arrived, he stated that he disapproved of such treatment, and upon the following day brought with him a letter from a prominent surgeon condemning both of

these operations. Dr. Phelps, of New York, has reported forty-three cases of fracture of the patella treated successfully by wiring. I prefer to treat these fractures with Malgaigne's hooks. It is claimed that the use of the hooks converts the fracture into a compound one. This is a mistake; but, even were it so, it would make but little difference, if antiseptic surgery amounts to anything."

Dr. Morton: "I have not used Malgaigne's hooks for years. In all suitable cases I open the joint by a vertical incision, and after drilling the fragments in at least two places, make close approximation with large size catgut. In every case so treated there has been apparently good bone union.

"One very serious objection to Malgaigne's hooks is, that very commonly torn portions of the ligamentous tissue after fracture fall in between the upper and lower fragments, and prevent bony union."

Dr. Mears: "When this subject was under discussion in the Academy some time ago, I stated that I thought the time had come when, in considering fracture of the sesamoid bone due to muscular contraction, the nomenclature could be changed so as to express more accurately the condition present, and thus lead to more rational methods of treatment. In fracture due to muscular action the structure essentially involved is the ligament, and as the result of the vulnerating force there is a rupture of the fibres of the ligament, accompanied by stretching of the unbroken fibres. In these cases, treatment by the former method, which had for its object apposition of the fragments of the bone, resulted in the infolding of the lacerated and stretched fibres so that they either rested between the ends of the fragments or over them. As the process of repair takes place the folds become attached to each other by plastic material, which is not very great in quantity. If the patient is confined at rest for a period of two, three, or four months, the union may become firm enough to prevent, under ordinary force, the separation of these folds, and with them the bony fragments. In fracture due to direct violence, there is contusion of the ligamentous fibres with fracture of the bone, but not rupture of the fibres of the ligament, and hence there is little or no separation of the fragments. The first condition may be properly designated as a rupture of the ligament with fracture of the bone; the second as a contusion of the structure with fracture. The treatment in the first condition is manifestly the same as that practised in case of rupture of a tendon anywhere, viz.: Exposure of the part by an incision, removal by the knife of the lacerated and stretched fibres, and suture of the divided ends of the ligament. If this is done thoroughly, it matters little what takes place between the ends of the bony fragments, as the bone originally does not contribute in any way to the strength of the ligament. In the second condition, in which the ligament is simply contused with fracture of the bone, rest upon a splint will give a successful result, as separation of the fragments cannot occur with the ligament untorn."

IODOFORM-POISONING.

An Addition to its Literature, with the Report of Four New Cases.

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But few cases of affections of the skin and subcutaneous tissue following the surgical use of iodoform have been reported. It is, therefore, remarkable that four such cases have come under the observation of the writer, three within the last eighteen months. It will be seen, too, that three of the cases had some interesting phenomena in common.

Case I.—Mrs. K., aged forty-five years; plethoric; was treated for a varicose ulcer above the ankle. The skin around the ulcer having become macerated by the use of adhesive strips, about two drachms of iodoform ointment (one drachm to the ounce of lard) were smeared on lint and applied under an elastic-roller bandage in the morning. A few hours afterward the leg began to itch. In the afternoon intense burning pain in addition to the itching caused the patient to remove the bandage. Her whole leg, from the instep to about two inches below the knee, was inflamed, swollen, and covered with blebs which had in part broken and discharged a serous fluid. The itching soon became general but there was no spread of the eruption, although free perspiration came on. Twenty-four hours after the application the patient noticed a sensation of tension and stiffness in the skin of the face. Œdema of the eyelids soon appeared and was followed by a rapidly-developing swelling of the face and temples, including the ears. This swelling was not inflammatory, or sensitive, but seemed quite resisting to the finger. On the second day a papular eczema developed on both forearms, the arms, the neck, and the upper third of the chest and back. This eruption on the forearms was preceded by swelling, and after the complete disappearance of the latter, became very widespread. On the sixth day the swelling of the face rapidly grew worse, and on the eighth day the patient was almost completely unable to see on account of the mechanical closure of the eyelids. No fever had existed, and her general condition was good. There was no headache and no gastric disturbance, but great languor existed.

The urine was alkaline, had a specific gravity of 1010, and was very light-colored, but not voided in excessive quantities. It contained no albumin.

The patient had so far been treated by saline purges. On the eighth day ten grains of calomel and five grains of bicarbonate of sodium were given in one dose. On the following day the swelling had greatly decreased, and after another twenty-four hours the face had entirely changed. The swelling had subsided to a slightly and uniformly raised, indurated, red surface, extending from the eyebrows over the whole of the face, and laterally over the temples and ears. It had sharply-defined, smooth outlines, and at first sight resembled erysipelas.

There was, however, only a little inflammatory redness, no constitutional symptoms, no pain, and no tenderness, but an annoying itching was persistent.

On the tenth day the appearance was that of a papular eczema, showing at some places a tendency to scale. The outlines had lost their sharp contour.

After two weeks the swelling had completely subsided, but some eczema of the face and forearms persisted for four weeks.

The healing of the ulcer was remarkably rapid. The induration which had proved so obstinate was absorbed, healthy granulations started up, and in a week's time the ulcer had completely healed and the surrounding skin was regenerated.

Interesting in this connection is the statement made by the patient, that eight years ago, while treated in a New York hospital for varicose ulcers, a similar train of symptoms, only more severe, occurred after the use of a yellow salve of the same odor as the iodoform ointment used on this occasion. The patient was sick in bed for several weeks, and, to quiet her pain, had to be kept under morphine for several days.

She also states that the appearance of her face, and her sensations were the same at that time, and that the hospital physicians had completely isolated her.

The iodoform ointment used on this occasion was freshly prepared and had been applied on other patients without bad results.

The following case, resembling the last in the cutaneous phenomena, was under the observation of the writer in the German Hospital of Philadelphia, in the fall of 1889, under the care of Dr. John B. Deaver, who has detailed the history in his article on secondary bone-implantation, in THE MEDICAL NEWS of December 28, 1889.

CASE II.—A. H. had for some time suffered from necrosis of the lower third of the femur. The diseased portion was removed, a large cavity resulting, which healed slowly. To hasten the process, implantation of decalcified, prepared bone-chips was practised. During the operation considerable iodoform was used. On the evening of the operation the patient had some fever, a rapid, weak pulse, and delirium characterized by frightful hallucinations. She recognized, however, every person about her. The patient was somewhat hysterical.

There was swelling of the face within twenty-four hours, especially around the eyes, which continued for several days and disappeared with the fever and delirium.

The healing of the wound was in no way unfavorably influenced, and it was always aseptic. Dr. Deaver attributes the phenomena to the influence of the iodoform.

The third case occurred in the person of the writer.

CASE III.—After a hip-joint resection, which, on account of a sponge sewed up in the wound by mistake, left a discharging sinus, a periosteal abscess formed on the left foot, which was laid open to the extent of three inches and packed with iodoform-gauze. The same night the face and hands began to swell and to ache and violent gastric pain set in, with nausea and vomiting, which continued for forty-eight hours. The iodoform-gauze was removed twenty-four hours after the application.

There were intense headache and languor. The swelling of the face and hands, at the end of forty-eight hours, had extended nearly to the elbows, and increased to such an extent that the hands were literally two large, unshapely masses of flesh, and the wrist-joints obliterated. A week subsequently the swelling had subsided.

Iodoform had, after previous operations, been freely used without evil consequences.

CASE IV.—The fourth case, to which I shall only allude, was M. B., a patient in the German Hospital during the winter of 1889-90. The anterior tibial nerve was resected on the dorsum of the foot, on account of neuralgia of the great toe, and an iodoform dressing applied. Acute dermatitis of the whole foot and part of the leg at once developed, with burning and scalding pain, the formation of blebs, and a profuse serous exudation. Later an iodoform dressing was again tried with the same result. No general or other local symptoms were noticed.

The features common to the first three cases are the solid tumefaction of the face, and, in two of them, the implication of both the hands and forearms. The swelling of the face was in all three cases urticaria-like.

The eruption on the arms in the first case was eczematous, and preceded by swelling, while in the third case no eruption appeared with the disappearance of the swelling.

In the literature on the subject the writer has found the following cases:

Urticaria developing on the second day after an application of iodoform powder to a small granulating surface left after a compound fracture of the radius and ulna, is reported by Powell[1] as the first case in his large experience. Wheals covered the face, neck, sternum, and back, and the whole forearm was covered with nodules. The wound healed rapidly.

The cases of acute eczema after the application of iodoform are reported by Fifield[2] and Campbell Pope.[3] The former used a small quantity of iodoform in powder on two successive days on an ecthymatous ulcerated surface of the scalp. Eczema, with a profuse serous discharge, developed on the second day. Two days later the head, face, and neck were enormously swollen, and the eyelids puffed to such a degree as to interfere with vision. There was but little systemic disturbance. The pulse was rapid.

Klomann[4] used from 30 to 40 grains of iodoform

[1] St. Louis Medical and Surgical Journal, vol. lvi., 1889.
[2] Boston Medical and Surgical Journal, March 16, 1882.
[3] Lancet, London, 1889, vol. i. p. 681.
[4] Maryland Medical Journal, 1889, vol. xxi. p. 404.

in powder on a rather extensive leg-ulcer. A few hours afterward acute dermatitis of the whole leg, and bleb-formation, developed with severe scalding and burning pain. The legs swelled, and also the hands, the latter to such a degree as to prevent flexion of the fingers. Constitutional depression was absent.

Barois's case[1] differs from the cases already cited in that an eruption appeared after repeated injections of an ethereal solution of iodoform two months previously. The eruption was urticaria-like, and located, as usual, on the arms, breast, and shoulders.

In addition to these peripheral cutaneous affections, a number of disturbances of the central nervous apparatus have been published, and which may be grouped together.

Most of these observations were made in France and Germany. They included all conditions, from simple active delirium to acute mania; and also mental depression, melancholia, and hypochondriasis, with or without sleepiness and stupor. Fever and gastro-intestinal disorders are either absent or present in variable degrees.

Koenig makes a distinction between a form resembling meningitis and a comatose form. To the former class belong cases of acute mania reported by Langenbeck,[2] of which several are said to have died.

A good example of the second group is the case published by Seeligmüller,[3] in which a moderate quantity of the powder was used on extensive surfaces. In this case the symptoms were, melancholia, hypochondriasis, delirium, with delusions, weakness of memory, cardiac weakness, headache, and somnolence.

Casius's[4] two cases of iodoform-poisoning, resembling meningitis in the cerebral and gastro-intestinal symptoms, but not in the temperature (which was only slightly elevated), partake of the characteristics of both groups, with a predominance of the symptoms of the former. Both cases were tuberculous.

Shere, of Hamburg,[5] describes six classes of cases as follows:

1. High fever, without other phenomena.

2. Fever, with mild gastro-intestinal irritation, depression of spirits, and rapid pulse. Recovery almost invariable.

3. Very rapid, soft pulse, from 150 to 180; no fever; great danger.

4. Very rapid pulse, with high fever; death almost invariable.

5. After severe operations, rapid collapse and death.

6. A form resembling meningitis: somnolence, deepening into stupor; pupils fixed in myosis.

The writer has not seen the original article, and, therefore, does not know what quantities of iodoform were used; but, as the cases occurred during the time of the very free use of iodoform in Germany, he assumes that they were large. Furthermore, it seems not improbable that the severity of the operations tended to produce the fatal result in the cases of Group 5, while the cases in Groups 1 and 4 resemble the condition seen after wound-infection.

A fatal case is reported by Langenstein, due to the use of one drachm,[1] and by Czerny after one and a half drachms.[2] "In the first of these the cause of death seemed doubtful."

Recently, a fatal case of iodoform-poisoning was reported by Barois in the *Archives de Médecine et de Pharmacie Militaires*, No. 8, 1890.[3] In this case the symptoms were mainly cerebral, and the patient died in coma on the ninth day. The iodoform was injected in ethereal solution into a cold abscess beneath the pectoral muscle, nearly a drachm being used.

Barois also gives a review of the reports of forty-two fatal cases. His grouping is similar to that of Koenig.[4]

Of the fatal cases, thirteen occurred after amputation of the breast. The disease necessitating the operation is not mentioned in all cases, but whenever noted it was cancer. The very large percentage of cancerous, tuberculous, or scrofulous individuals among the fatal cases arranged in tabular form, is striking. Of the forty-two cases, such a diathesis or cachexia appears in thirty-seven. The others were as follows:

1. Ovariotomy. (Disease not given.)

2. Removal of the tongue. (Primary disease not mentioned.)

3. Amputation of a leg.

4. Laparotomy. (Myoma uteri.)

5. Vaginal hysterectomy. (Disease not mentioned.)

Langenbeck's[5] experience, as given by him before the Eleventh Surgical Congress, Berlin, 1882, was that he had seen no evil consequences when he used iodoform cautiously. Eckelmann[6] also finds the

[1] Archives de Médecine et de Pharmacie Militaires, No. 8, p. 90.

[2] Synopsis of the official reports of the Surgical Congress, Berlin, 1882, by Louis Bauer; reported in the St. Louis Medical and Surgical Journal, 1882, vol. xliii. p. 235.

[3] Berlin. klin. Wochenschrift, May 8, 1882.

[4] La France Médicale, Nov. 20, 1888.

[5] H. C. Wood: Materia Medica, Therapeutics, and Toxicology.

[1] Wiener med. Woch., 1882, vol. xxxii. p. 105. [2] Ibid.

[3] Reviewed in THE MEDICAL NEWS, vol. lvii. No. 9, p. 485.

[4] Troubles intellectualles qui font panser a la méningite aigue ou aux formes les plus graves de la mélancholie.

[5] Quoted by Bauer in the St. Louis Medical and Surgical Journal, 1882, vol. xliii. p. 235.

[6] Allgem. Zeitschr. f. Psychiatr. xl. p. 258; Neurol. Centralbl., 2, 1883, p. 352.

moderate use of iodoform harmless in the surgery of the insane.

It must further be taken into consideration that psychoses at times develop in immediate consequence of operations. Thus, v. Frankl-Hockwart reports thirty-one cases of psychosis following operations on the eye.[1]

The writer himself has seen a case of acute mania following an oöphorectomy during his residentship in the German Hospital.

It is generally accepted that the liberation of iodine, and the action of the latter on the nervous centres and internal organs, are accountable for the grave phenomena and fatal terminations of iodoform-toxæmia. It is also known that various skin eruptions are one of the symptoms of iodism. The use of iodine internally for some time is necessary to produce them, while one of the most striking features of iodoform-poisoning from dressings is their prompt appearance.

Idiosyncrasy must explain why large amounts are so often borne with immunity, while in comparatively few cases under similar circumstances death is caused by small amounts—as little as 45 grains in Barois's case.

Although, as stated by Barois, danger in poisoning depends in part on the form of application and the locality, yet the same mode of application in the same localities is by no means always followed by the same result. It seems that the cause must be looked for in conditions which favor the decomposition of the iodoform and the formation of albuminate of iodine. De Ruyter (quoted in Dr. H. C. Wood's work on therapeutics, 7th edition, page 540) showed that iodoform is decomposed by blood, serum and other organic fluids in which microörganisms are growing, and apparently proved that the decomposition is produced by the ptomaïnes developed by the growing organisms.

If this be true, the danger of the toxic effects of iodoform-application depends on the presence on absorbing surfaces of an organic fluid, as blood or serum, or of ptomaïnes. Whether these be the outcome of bacteriological life or of direct chemical changes seems indifferent.

From the foregoing facts it would appear that:

1. Iodoform-toxæmia, after external application to wounds or ulcerating surfaces, manifests itself in one or more of the following clinical forms, viz.: lesions of the skin and subcutaneous tissue, gastro-intestinal irritation and disturbances of the nervous system, either psychical, thermal, or cardiac in their manifestations.

2. Very small doses do not lead to grave intoxication, though even the most trifling doses may produce annoying skin symptoms.

3. The uticaria-like eruptions or eczematous or simple dermatitis with profuse serous discharge resemble each other in their distribution.

4. All forms of iodoform-poisoning have the common features of rapid development and slow disappearance.

5. In none of these cases was the repair of the wound impaired, but, on the contrary, in some rapid improvement was striking.

6. Some apparently normal individuals are by idiosyncrasy predisposed to iodoform-toxæmia.

7. The fatal cases so far reported show that tuberculous, scrofulous, or cachectic individuals are most exposed to danger, a fact which is well illustrated by the writer's third case of iodoform-poisoning, which occurred after chronic suppuration, while large quantities of iodoform had been used with immunity before the existence of the latter.

8. These clinical facts seem to harmonize with de Ruyter's experimental results, according to which the danger of iodoform-poisoning depends on the presence of organic fluids and ptomaïnes on absorbing surfaces, under the action of which albuminates of iodine are formed, which are subsequently absorbed.

9. The danger of poisoning also depends in large part upon the form of application, that by ethereal solution having proved most virulent, and also, it seems, upon the locality to which it is applied and the extent of denuded surface.

10. Though iodoform is extensively used in specific inflammations, no case of iodoform-poisoning belonging to this group is reported, and therefore it seems not unlikely that immunity exists in syphilitic individuals.

After this article was completed the writer's attention was called by Dr. H. A. Hare to five cases reported[1] by Charles Audry, of iodoform-poisoning following tamponing of the peritoneum after Mikulicz's method. A considerable amount of iodoform was used in each case. In four cases the symptoms were slight, consisting mainly of elevation of temperature, without local or general signs of infection, gastric irritation, and a peculiar metallic taste (*signe de l'argent de Poncet*). Iodoform was discovered in the saliva in each case. The only fatal case was cachectic. An enormous ovarian cyst was removed. Fatty heart and kidneys are supposed to have existed. Iodoform-gauze was used for tamponing. The patient died from septicæmia and iodoform-toxæmia, the former being the immediate cause of death, but the symptoms of the latter being marked.

This is one more fatal case of iodoform-toxæmia

[1] Jahrbuch für Psychol., ix. p. 15, 182. Referred to in Neurol. Centralbl., March 15, 1890.

[1] Lyon Médical, November 16, 1890.

in a cachectic individual. In favor of the theory based on de Ruyter's experiments is also the presence of considerable exudate in the serous sac. On the other hand, it illustrates the importance of excluding septicæmia as a *causa exitus lethalis*, and also the importance of an examination of the kidneys prior to the application of iodoform. In all cases the symptoms supposed to be due to the iodoform developed promptly.

Audry also found that septic symptoms are most likely to develop after the removal of tampons which were firmly packed and adherent. The explanation given by Sänger is adopted, namely, that in the stretching of the gauze strips, part of their contents are squeezed into the peritoneal cavity.

MEDICAL PROGRESS.

Chronic Bronchitis. — *L'Union Médicale* recommends the following pill for chronic catarrhal bronchitis:

℞.—Turpentine } . . of each ½ drachm.
Tar }
Balsam of Peru . . . 1½ drachms.
Benzoate of sodium, a sufficient quantity to make 80 pills.

Two of these pills may be given three times a day, in cases in which there is marked catarrhal exudation into the bronchial tubes.

Treatment of Excessive Sweating.—KAPOSI is said to recommend the following treatment in cases of excessive sweating.

℞.—Powdered tannic acid . . 75 grains.
Alcohol . . . . . 6 grammes.

This is to be made into solution and employed with friction several times a day, in cases of excessive sweating of the axillæ, the skin being afterward covered with pulverized talc. In excessive sweating of the feet it may be useful to employ the powdered talc, powdered starch, or lycopodium with powdered almonds. It is also sometimes useful to resort to washing the parts with alcohol. The patient must be warned not to rub the feet with glycerin or ointments.

Treatment of Senile Pruritus.—In the treatment of senile pruritus BESNIER employs the following solution:

℞.—Carbolic acid . . . . 1 drachm.
Vinegar . . . . . 8 ounces.

This is to be applied as a lotion to the surface which is affected, after having been mixed with from 1 to 2 pints of hot water. Afterward the parts are to be covered with a powder composed as follows:

℞.—Salicylate of bismuth . . . 6 drachms.
Powdered starch . . . 3 ounces.

Or salicylic acid may be employed in place of the salicylate of bismuth, with twice the amount of powdered starch, namely, 6 ounces.

Treatment of Intercostal Neuralgia. — MENARD treats intercostal neuralgia by applying a blister over the painful spot, by painting the part with iodine, or by the use of hot and cold douches. At the same time, if the pain is severe, he administers small doses of opium, or even hypodermics of morphine. Sometimes atropine or chloroform may be needed, and frequently soothing liniments have to be applied. The causes of intercostal neuralgia are numerous, and the condition which provokes the pain must be discovered and removed. If it is due to anæmia, Menard advises a course of baths, accompanied by the use of one of the preparations of iron. On the other hand, if the neuralgia be due to rheumatism, the salicylates, antipyrine, or diaphoresis must be resorted to; and if the case is a chronic one, sulphur, alkaline, or thermal baths should be adopted. Venesection, however, in the majority of cases gives excellent results. In other instances, iodine ointment applied to the walls of the chest, protecting the clothing by means of an adhesive plaster, seems to do great good.

The Treatment of Purpura.—If purpura is accompanied by hæmorrhages, the physician should resort to the use of such drugs as ergot or Monsel's solution. On the other hand, if it depends upon scorbutus, the best treatment is the employment of the juice of lemons or citrons, and the maintenance of a vegetable diet. In those cases which are due to blood-poisoning, the physician should administer tonics and quinine to combat the fever. The nourishment should be liquid, and chiefly composed of milk, thin soups, with a little wine or rum. In cachectic purpura the anæmia is to be cured by the methods usually employed for this purpose. If the disease invades the lower extremities, the patient should be forbidden to walk about, as this tends to an increase in the hæmorrhagic exudate.

Mixture for Catarrhal Jaundice.—

℞.—Powdered rhubarb . . . 7 grains.
Distilled water . . . . 6 ounces.

Make into an infusion, filter, and add bicarbonate of sodium, 2½ drachms, and syrup of peppermint, 5 drachms. Of this, give a dessertspoonful every two hours.

A Mixture for Hæmoptysis.—BAMBERGER employs the following mixture in hæmoptysis:

℞.—Turpentine . . . . 1 drachm.
Oil of sweet almonds . . 1 "
Mucilage of acacia . . . 4 drachms.
Simple syrup . . . . 4 "
Distilled water . . . . 5 ounces.

One teaspoonful of this mixture may be given every half-hour.

Lemonade-wine.—DUJARDIN-BEAUMETZ, in the *Bulletin Général de Thérapeutique*, January, 1891, recommends the following drink in typhoid fever and other febrile states:

℞.—Red wine . . . . . ½ pint.
Tartaric acid . . . . 2 drachms.
Water . . . . . 1½ pints.

Or, if more wine is desired, equal parts of wine and water may be used. For those who prefer a white to a red wine, the white wine may be substituted.

The Treatment of Syphilitic Vegetations of the Genitals.—The following prescription may be employed for the removal of syphilitic condylomata. BOCKART, under the name of "lead-caustic," uses:

℞.—Oxide of lead . . . . . 4 grains.
Saturated solution of caustic potash at 100° . . . . . 2 drachms.
Mix and label, "For external use."

This mixture is to be applied to the vegetations by means of a small glass rod or stick, and immediately after its application a small tampon is to be applied over the spot. After the mixture has been in contact with the vegetation for five minutes, it will be noticed that the mass has the consistency of mucus, and is removed without difficulty. The spot which remains should be treated by a powder of iodoform.

Intra-uterine Antisepsis.—The following prescriptions taken from *La Tribune Médicale* have been collected by COUTURIER from the methods of various gynecologists and obstetricians in France and Germany.

DOLÉRIS uses a mixture composed of

℞.—Creasote . . . . . 20 parts.
Glycerin . . . . . 60 "

BUDIN one of

℞.—Creasote . . . . . 15 parts.
Glycerin . . . . . 50 "

When creasote is not used ROUX and SCHNELL use an emulsion of iodoform made by adding 15 parts of iodoform to 30 parts of glycerin, or in other cases they use the following:

℞.—Iodoform . . . . . 50 parts.
Glycerin . . . . . 40 "
Water . . . . . 10 "
Gum tragacanth . . . 1 part.

In other instances,

℞.—Iodoform . . . . . 2 parts.
Gum tragacanth . . . 6 "
Water . . . . . 10 "

PERAIRE uses,

℞.—Powdered iodoform . . . 10 parts.
Gum tragacanth . . . 1 part.

Glycerin and water, a sufficient quantity to make a suppository.

SPAETH, of Vienna, is said to use suppositories composed of the following materials:

℞.—Powdered iodoform . . . 20 parts.
Gum arabic . . . . 2 "
Glycerin . . . . . 2 "
Powdered starch . . . 2 "

The Treatment of Hepatic Colic and Catarrhal Jaundice with Calomel.—ZACHARIINE, Professor of Clinical Therapeutics at Moscow, has published some remarkably favorable results which he has obtained in the treatment of hypertrophic cirrhosis of the liver and grave cases of hepatic colic accompanied by fever by the administration of fractional doses of calomel. The calomel is to be given in the dose of one-half grain every hour until five or six doses have been taken, and after this every two hours until the characteristic purging produced by calomel appears. If the calomel does not act it is necessary to follow it by a saline or a tablespoonful of castor oil. It is also useful for the patient to use frequently a gargle of chlorate of potassium, in order to avoid the appearance of mercurial stomatitis. This gargle should be continued for some days after the calomel has been stopped. The influence of this treatment is said to be felt almost immediately, and causes very considerable amelioration of the symptoms. The pain, the fever, and the dyspeptic symptoms disappear, and the urine in catarrhal jaundice becomes clear. Alkaline mineral waters may now be given with advantage. In one case of peculiarly severe hepatic colic, Zachariine was obliged to administer calomel in this way on ten different occasions in the space of two months before a cure was obtained.

Night-sweats.—The following prescriptions for the relief of night-sweats are published in the *Revue Général de Clinique et de Thérapeutique:*

℞.—Sulphate or tannate of quinine . 15 grains.
Powdered ergot . . . . 30 "

Divide into four powders and take two or three in the course of the day. This prescription is also valuable in cases having a tendency to hæmoptysis.

Or,

℞.—Powdered agaricine . . 1 drachm.

Make into four powders and take one powder at night.

℞.—Powdered agaricine . . 1 drachm.
Powdered belladonna root . 7 grains.

Divide into four powders, take one powder at night.

℞.—Powdered agaricine . . 1 drachm.
Tannin . . . . . 1 "

Make into four powders and take one to two powders a day.

Prescription of Chloralamide.—GALIANA recommends the following prescription when using chloralamide:

℞.—Chloralamide . . . 45 grains.
Dilute hydrochloric acid 5 parts.
Distilled water . . . 2 ounces.
Syrup of raspberry . 2½ drachms.

One-half of this amount may be given. This may be divided into four doses, one of which may be given every four hours. For rectal injection he recommends:

℞.—Chloralamide . . . 30 grains.
Dilute hydrochloric acid . 2 drops.
Distilled water . . . 3 ounces.

Or the chloralamide may be dissolved in an infusion of tea to which should be added a considerable quantity of sugar.

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OF MEDICAL SCIENCE.

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SATURDAY, MARCH 7, 1891.

THE MEDICO-LEGAL VALUE OF THE GONOCOCCUS.

SINCE the discovery of the gonococcus, and since its general acceptance by the medical profession as a means of differentiation between specific and non-specific blennorrhœa, hopes have been entertained that it might prove of value in medico-legal cases, especially in those instances of vulvo-vaginitis occurring in children, and often giving rise to suspicions of criminal practice. Neisser, Lober, and Kratter all assert very positively that by the aid of the microscope they can determine without question whether the vaginal discharge is gonorrhœal, dependent upon impure contact, or whether it is non-specific, in which case it may be evoked by any one of a large number of irritants.

VIBERT and BORDAS (*La Médecine Moderne*, November 13, 1890) point out that to be of value in legal medicine the proof must be absolute, and that probabilities are of little avail. The vagina contains, even in health, a vast number of microörganisms. If the secretion of an acute vaginitis occurring in the person of a little girl is examined diplococci presenting all the characteristics of the gonococcus are usually observed.

In those cases examined by the authors the cause of inflammation was purely traumatic, and according to the evidence it was scarcely possible that gonorrhœal pus had come into contact with the mucous membranes. The discharge of these cases contained diplococci resembling in every respect gonococci. From four cases pure cultures of this microörganism were obtained, in the remainder there were other varieties. The diplococci were found always in the interior of the pus-corpuscles, and were very abundant. In form, in dimensions, in position, in grouping, in habitat, and in reaction to staining-fluids, these microörganisms were identical with gonococci.

It is well known that in the Gram method the aniline stain affects all microörganisms likely to be found in blennorrhœal pus excepting the gonococci; hence, when a preparation previously colored is washed for some minutes in Gram's solution and is then dehydrated in alcohol the gonococci are completely decolorized. The diplococci of non-gonorrhœal pus act in the same manner.

Other authors and especially Bumm have asserted that there are microörganisms which cannot be distinguished either morphologically or by staining-methods from the gonococcus.

It would seem from the present evidence that the results of microscopical examination of vulvo-vaginal discharges are not sufficiently conclusive to warrant a positive statement either for or against impure contact.

THE TREATMENT OF CHRONIC PERIMETRITIS AND PARAMETRITIS.

DR. SAVAIL (*Revue Obstétricale et Gynécologique*, September, 1890), in advocating the treatment of chronic perimetritis and parametritis by warm sulphur baths, offers the following theory: Perimetritis, secondary to chronic catarrh and hyperæmia, depends in the beginning on a permanent lesion of the epithelium lining the uterus, tubes, and follicles of the ovaries, which, in its whole extent, is derived from the germinal epithelium, and presents, with the exception that the cilia are absent in the cylindrical epithelium of the follicles, the same general type.

In support of his treatment the writer alludes, first, to the excretion of sulphur by the epithelium of the air-cells, proved by the early demonstrations of Bouchardat, in which the exhalations from patients under sulphur treatment cause the surface of a lead plate to turn black. He then refers to the theory of Bergeon in establishing the beneficial action of sulphur, during its excretion, on the pul-

monary epithelium; and concurs in the opinion of Küss, who, in his experiments on the intestinal absorption of sulphur contained in the bile, demonstrates the importance of this substance in the reconstruction of the epithelium. He attributes to sulphur a double action on the epithelium—antiseptic and reparative: antiseptic—in neutralizing toxic alkaloids of bacterial origin; reparative—in reëstablishing the physiological resistance of the cells; or, in other words, in exerting a *vivifying* influence on the germinating layer of the epithelium. Thus, in chronic perimetritis, the treatment owes its efficiency to the chemical, as well as the thermal, action of the sulphur baths; in parametritis the latter element plays the more important *rôle*, in stimulating, by means of warm baths, the peripheral circulation, and by exciting, by means of warm sulphur douches, the pelvic circulation.

He is particular to place the altered hygienic and climatic conditions of the patients, their physical and moral repose, and the mode of employing the waters under the head of auxiliaries, but it is a question whether in this he does not claim for his method an undue advantage over other baths. However this may be, the cases which he reports speak for the success of the treatment, and the importance of his communication is manifest: First, because he attaches a clinical importance to the primary pathological lesion; and secondly, because he brings to notice the advantages of general treatment in such disorders.

No doubt the advocates of massage would be unwilling to admit that the foundations which they claim for their mode of treatment, namely, stimulation of the pelvic circulation, and restoration to the lymphatics and nerves of the pelvis their proper function, are not claimed with equal justice by the hydropathist.

In our opinion, however, the hydropathic treatment accomplishes the results attributable to massage by milder procedures, and by measures better directed toward the general improvement of the patient, and, therefore, offers the greater advantages.

ABDOMINAL PAIN AS A SYMPTOM OF SLOW HÆMORRHAGE INTO THE PERICARDIUM.

ABDOMINAL pain is certainly not frequently present in cases of slow hæmorrhage into the pericardial cavity, for it is entirely omitted in the accounts of this condition given by most authorities. It is, therefore, interesting to observe that Dr. NAISMITH, of Scotland, has reported four cases of this nature—three in the *Lancet*, July 11, 1885, and the fourth in the *Lancet*, November 9, 1889. In all of these cases the ordinary symptoms of hæmorrhage into the pericardial sac were either absent or quite overshadowed by the abdominal pain.

In the first case, a man of forty-eight years was found lying on the ground much exhausted, and complaining of pain in the region of the abdomen. His statement was that he had felt something give way in his chest. His pulse was feeble, there was a sense of constriction in the chest with slight dyspnœa, but the abdominal pain was so marked (although there seemed to be no disease of the abdomen) that opiates and poultices were used. In six hours he died, rather suddenly. At the post-mortem examination the aorta was found atheromatous, the pericardium was distended with clots and fluid blood, and there was an aneurism as large as a hen's egg of the ascending portion of the aortic arch, which had opened by a small aperture into the pericardium. The heart was pale, flabby, and friable, but its valves were competent, and there was no disease of the abdominal organs found.

In the second case, a man forty-five years old received a blow on the chest. Though complaining of pain in the chest, he was able to walk home, and on arrival seemed about as usual. In an hour he went to bed suffering from pain in his abdomen. A physician applied poultices to the epigastric and umbilical regions, where the pain was most severe. The patient became worse, and died in eight hours. On post-mortem examination no disease was found in the abdomen. The pericardium was distended with clots and blood, and a rupture was found in the wall of the right auricle a fourth of an inch in length, very narrow, and made valvular by a clot. The aorta and heart were somewhat degenerated; the other organs were normal.

In the third case, a man of twenty-five years was found on his back by the roadside, conscious, but extremely weak, and his clothing soaked with blood. There was a knife-cut over the heart an inch in length. He did not think that the wound was fatal, but asked to have his trousers loosened, as he felt great pain in his abdomen. He died while being carried to the hospital, six hours after the injury. At the post-mortem examination the cut was found to have penetrated the pericardium, which was full of clots and blood, and to have passed through the

wall of the left ventricle. All the other organs appeared to be normal.

In the last case, a female laborer forty-eight years of age, who had had occasional attacks of dyspnœa and pain in the chest, became suddenly very ill, with vomiting and severe abdominal pain. When seen by a physician on the following day she was in bed and suffering from agonizing pain in the epigastrium, but not in the heart. This pain had been constant since the onset of her illness. No disturbance of respiration was noticed. In this case also the treatment was directed to supposed disease of the abdomen. She died twenty-six hours after the accident.

At the autopsy the pericardium was found livid and tensely distended with clots and blood. There was an aneurism of the aorta the size of a small egg, which opened by a minute orifice into the pericardium. The aorta was atheromatous; the heart-walls were soft and friable. It was supposed that rupture had occurred several hours before death. No other signs of disease were found.

All these cases occurred in medico-legal practice in Scotland, and are to be accepted as reliable. No attempt was made to minimize the other symptoms, nor does the writer believe that abdominal pain is a constant symptom in such cases.

That the abdominal pain was not caused by co-existing disease is rendered almost certain by its presence in the case of stab-wound, in which the heart and other organs were free from disease.

Dr. Naismith considers the abdominal pain to be a reflex sensation, excited by the pressure and irritation of the hæmorrhage. In pericardial effusion there is no pain, because the pouring out of the liquid is slow, and perhaps because the sensitiveness of the surfaces upon which it is poured is diminished by disease; whereas in hæmorrhage the outpouring is comparatively rapid and the pericardial surfaces are normally sensitive. The irritation, passing up the vagus to the centres in the medulla, is reflected down the vagus to the solar and mesenteric plexuses; or, perhaps, spreads in the medulla to adjacent cells connected with the great splanchnic, and so reaches the solar plexus.

RECENT STUDIES IN LEPROSY.

Neither in England nor in America has much been done toward the scientific study of leprosy. In Germany and France, on the contrary, many valuable studies have been made by trained observers and in the leprosy centres of various parts of the world, in Norway, in the Levant, in Palestine, in Africa, China, and the British East and West Indian possessions, medical men placed in favorable positions for study are actively engaged in efforts to ameliorate the conditions of sufferers, and to find palliatives or a cure for the disease if possible.

The papers published by these observers, and their reports made to governments, or to medical societies, are full of interest, and we regret that we can do no more than summarize their results. The literature of leprosy, it must be said, is enormous, and seems to be increasing rapidly.

A recent article by Professor Boinet, "On Leprosy in Hanoi" (Tonquin), in the *Revue de Médecine*, is a particularly interesting one.

As regards the immediate cause of leprosy, the *bacillus leprœ*, but little new has been discovered. The life-history of this organism remains, as yet, a mystery. This much is known, that it in all probability resists the action of putrefactive material, since it is said to have been found in the earth about the graves of lepers. Although the identity of the bacillus thus found is not beyond dispute, yet the fact of several cases of leprosy having been reported as occurring in those handling or exhuming dead lepers is in favor of the existence of the germ, perhaps in some form as yet unknown in the putrefying cadavers of lepers.

That the bacillus was directly conveyed in these cases seems unlikely, because cases of direct contagion, or inoculation in the ordinary sense of the word, have been only rarely reported, and have never gone entirely undisputed. The greater number of cases of supposed contagion have occurred under circumstances which involved exposure to all other influences, namely, climate, surroundings, and food, which have always been known to favor the occurrence of the disease. But a single case occurs to us in which the fact of direct contagion appears almost indisputable. It is Dr. Hawtrey Benson's case of an Irishman who had never left his native land, and who contracted leprosy after having worn the clothes of his leper brother who had come home from India to die. Very numerous attempts have been made to inoculate leprosy upon animals and also upon men. All but one, we believe, proved futile. The one successful case, that of Keaner, the Sandwich Islander, inoculated by Arning, is not regarded as conclusive by that careful observer, since the man

came of a leprous family himself and was brought up among lepers.

On the other hand, the enormous weight of evidence against direct contagion which has accumulated within the last few years would, before the discovery of the leprosy bacillus, have been regarded as perfectly conclusive against the theory of contagion.

Zambaço, a well-known physician of Constantinople, in a pamphlet published a few years ago, gave a large number of examples tending to show the non-transmissibility of leprosy by direct contagion. In some instances great efforts have been made to convey or to receive the disease. Zambaço reports the case of a handsome young woman of good family, who fell in love with a leper and married him. She lived with him for eight years. Partly through jealousy on his part, and partly through devotion on hers, they made every effort to share the leprosy. The leprous husband caused her to kiss his ulcerated tongue repeatedly and numerous attempts at inoculation were made. Nevertheless, while the husband died of leprosy the widow still survives in good health after some years.

With facts like these confronting them, investigators have been led to the conclusion that leprosy is conveyed in some other manner than by direct contact or inoculation of the bacillus.

The theory of an intermediate host has been put forward with the corollary of a transition form of the parasite. We believe there is no analogy among the vegetable parasites to guide us in this matter, such as we have among the animal parasites, but this view is just now exciting considerable attention. In order to ascertain what facts could be adduced, extensive examinations of food, air, soil, etc., in leprosy districts have been undertaken. As regards fish, which has been always more or less incriminated, this article of food in the salted state has, indeed, been found the habitat of numerous varieties of bacteria, and when putrid doubtless contains many more. But no organisms have, as yet, been found in this article of diet which can be connected with the leprosy bacillus.

A curious relationship between leprosy and tuberculosis has been suggested of late, and the resemblance between the two forms of bacillus, together with the fact that the diseases are often concurrent, lends a certain interest to these views, which will certainly be examined into by those having the opportunity of investigation.

Preventive inoculation, which has been talked of for some time, must receive a new impulse from the results of Koch's discovery. Meanwhile, cases of cure seem to be gradually increasing in number, although no new remedies have been discovered.

Looking at the subject from a general standpoint we may hopefully assert that real progress is being made in the study of leprosy, and that there is good ground to hope for the diminution and even the ultimate extinction of the disease in most parts of the world.

REVIEWS.

A HANDBOOK OF THE DISEASES OF THE EYE AND THEIR TREATMENT. By HENRY R. SWANZY, A.M., M.B., F.R.C.S.I. Third edition, with illustrations. Philadelphia: P. Blakiston, Son & Co., 1890.

The third edition of Mr. Swanzy's excellent treatise shows evidence of having been carefully revised and rearranged. The chapters on diseases of the iris, ciliary body, choroid, and sympathetic ophthalmitis have been incorporated into one chapter under the general heading of "Diseases of the Uveal Tract." This, as the author suggests, is more consonant with their nosology, and will lead the student to a much more thorough and rational grasp of the subject. Other changes have been made, especially in the chapter upon the localization of cerebral disease from a study of the ocular symptoms, which has been enlarged and much improved. The addition of a colored diagram, showing the course of the optic fibres, with the centres for the three visual perceptions of light, form, and color and their relations to the field of vision, is a very commendable feature. In explaining Wernicke's symptom, the hemianopic pupillary inaction of hemianopsia, the author does not name the symptom by any of the terms commonly used. Similar omissions to designate properly symptoms by their well-known names result in needless trouble or mystification of the student. But there are few defects to be pointed out, and, viewing the work as a whole, it may be said that Mr. Swanzy has succeeded in producing the most intellectually conceived and thoroughly executed *résumè* of the science within the limits he has assigned himself. As a "students' handbook," small in size and of moderate price, it can hardly be equalled.

CORRESPONDENCE.

KANSAS CITY.

KANSAS CITY has received two invoices of Koch's lymph—one of five ounces and another of two and a half ounces. It is unfortunate that the recipient of one package is making use of it in an irregular manner and in direct violation of his promise to Professor Koch to use it only in hospitals. Aside from this he has thrown discredit upon the lymph by making a very poor selection upon which to begin the treatment, the patient being almost *in extremis*, and dying in a week after the first injection. The death is not attributable to the

treatment, for the latter was stopped after the third injection because of the absence of any reaction and the very alarming condition of the patient. The autopsy showed a general miliary tuberculosis in addition to a large cavity in one of the lungs. So, while the lymph had nothing whatever to do with the patient's demise, the notoriety given it by the daily press of the city has made patients previously anxious to undergo the treatment very cautious and reluctant.

Dr. E. Von Quast, the recipient of the other invoice, has three patients under treatment, and reports that they seem to be improving.

One of the cases of early phthisis had a reaction temperature of 104° F. from 0.001 of the lymph. Another case, one of tuberculosis of the pharynx, does not experience the general reaction, but the local reaction is very marked, and the case is improving. The cases have been under observation but a week, so, of course, it is too early to speak definitely; but those who are watching them have "great expectations," especially in the case of the man who has tubercular disease of the pharynx.

The tidal wave of knowledge is gradually sweeping westward, and the faculties of the two principal schools here are aroused to the necessity of lengthening their courses; one of them has taken steps already in that direction, and the other will soon follow.

Several meetings have been held recently with a view to establishing a post-graduate school here. Certainly, Kansas City needs a post-graduate school, for the majority of the graduates of our local schools choose this city or the surrounding country as localities in which to practise their profession. The plan does not seem practicable to many, on account of the scarcity of clinical material, and the fact that a post-graduate school without an abundance of clinical material would be a farce.

The very mild epidemic of scarlet fever which prevailed during the past few months is subsiding, and the general health of Kansas City is very good.

The meetings of the Academy of Medicine are growing in interest, and the earnest individual effort which is being put forth by the members is resulting in much better papers and discussions.

METHYL-BLUE IN DIPHTHERIA.

To the Editor of THE MEDICAL NEWS,

SIR: Fifty cases of *well-marked* infantile pharyngeal diphtheritis have been successfully treated by me during the last six months by the local application of a mixture of chemically-pure methyl-blue and powdered sugar, two parts of the former to ninety-eight of the latter, controlling the fever with small doses of acetanilid and sustaining the vital forces with extract of beef, egg and milk. The methyl-blue I employ is entirely tasteless and free from all deleterious effects (Lehr & Fink, 128 William St., New York). The manner in which I use it is as follows: The patient's head is held in a horizontal position, the tongue depressed, and from five to ten grains of the powder are freely applied to the pharynx. This is repeated every two hours, or as often as new crops of exudation make their appearance. Sudden elevation of the head must be prevented, the mouth kept closed to prevent spitting, and no drink or food given for ten or fifteen minutes before and after the application.

Retronasal and laryngeal diphtheritis has in none of the fifty cases above referred to made its appearance. Where the nose or larynx was involved at the beginning I could not claim such good results, owing to the already enfeebled condition and the great difficulty of applying the remedy, still I have done better with it than with any other treatment. Washing the retronasal and nasal space with boiled water and applying the powder with the Devilbiss blower have given me the most satisfaction.

I experienced great difficulty in getting the right blue; it is on that account that I mentioned Messrs. Lehr & Fink, who are agents for this article; at the same time, I believe it to be the same as methylene-blue made by Merck (see Merck's Bulletin, January, 1891).

H. BEYER, M.D.

STAPLETON, STATEN ISLAND, N. Y.

A STRANGE CASE OF POISONING.

To the Editor of THE MEDICAL NEWS,

SIR: I was called in haste on the night of December 29, 1890, to see Mrs. P., a married woman, and her child, aged about seven years. On arriving at the house I found them suffering from some strange form of poisoning. On inquiring as to whether any poisonous substance had been taken, I was told that the mother, thinking she was suffering from amenorrhœa, had prepared a decoction from what she supposed to be the root of wild ginger, or Ascarum canadensis, and had taken a considerable quantity of the liquid. The child had also taken some of it with the hope that it would relieve a "bad cold." The symptom which the mother presented was intense pain in the mouth, throat, stomach, and bowels, which was continuous and burning in character. The face, hands, and the lower third of the forearm had the sensation of a thousand small sharp needles piercing the flesh in every direction, and there was also a great deal of burning pain about the wrists. The strangest symptom of all, however, was the eruption which was present. The skin of the face and all the subcutaneous tissues were much swollen, so that one eye was entirely closed and the other eye nearly so. The eruption resembled erysipelas, for the skin was red, thickly covered with pimples and vesicles, while scattered among these were several blisters of considerable size. The eruption was also present about each knee covering a space as big as a hand, being chiefly confined to the popliteal region. In other portions of the body small pimples dotted the skin, and a few vesicles could be found here and there. I forgot to mention that the hands and fingers were much swollen, sufficiently so to make the fingers stand wide apart.

The constitutional symptoms consisted in frequent rigors, accompanied by a fever of about 101°; the pulse was 122 and weak. There was a good deal of nausea and some vomiting. During the remainder of the attack there were considerable swelling, pain, and heat about the anus, and these symptoms were still more marked at the vulva; the labia majora, the nymphæ, and the vagina were greatly swollen, while the burning sensation caused a constant desire to urinate, although micturition was very difficult and painful.

The little girl's symptoms were identical with those of her mother except in degree, all of them being of a milder type, as she had not partaken so freely of the decoction. Another child, who had taken a very small quantity of the liquid, had the same eruption over its body.

The patients made a good recovery, although convalescence extended over three weeks.

I am altogether ignorant of the effects of wild ginger, except the account given in our different dispensatories, and if any of the readers of THE MEDICAL NEWS can give me any information in regard to the use of wild ginger I shall be glad to hear from them. Is wild ginger poisonous? and if so, would it be likely to produce such characteristic symptoms? The husband of the woman gave me some of the roots, which had been collected last fall. They were from two to four inches long, varied somewhat in size, but averaged about the diameter of rye-straws. They were crooked and knotty, very brittle, and gave a pleasant, aromatic taste when chewed, which closely resembled that of cardamom.

JAMES MITCHELL, M.D.

MADISON, BOONE CO., WEST VIRGINIA.

FOREIGN BODIES IN THE ŒSOPHAGUS AND GASTRO-INTESTINAL TRACT.

To the Editor of THE MEDICAL NEWS,

SIR: The potato treatment, which has been so largely employed for the removal of foreign bodies in the gastro-intestinal tract, can well be substituted, in my experience, by the employment of pieces of orange of sufficient size to cause so much dilatation of the œsophagus when the orange is swallowed as to permit the foreign body to fall into the stomach, or, if the foreign body has already reached the stomach or intestines, to entangle it in the meshes of the pulp and ultimately to cause its expulsion from the bowel. In a case which came under my care in which a carpet-tack had been swallowed and lodged in the œsophagus a large bolus of orange stopped at a point about half way to the stomach and remained there. The tack had evidently fallen point downward, and had caught in a fold of the mucous membrane, the head of the tack acting as a ledge against which the fruit rested, so that it was impossible to dislodge the foreign body. I gave an emetic, with the result of causing the tack to fall into the stomach during the efforts at vomiting. Physicians will be surprised to find how slowly orange-pulp in mass is digested, as I have frequently seen sections of orange which have been swallowed appear in the fæces, three days after ingestion, almost unaltered. THOMAS HUBBARD, M.D.

TOLEDO, OHIO.

TETANUS.

To the Editor of THE MEDICAL NEWS,

SIR: Having just read an article in THE MEDICAL NEWS of February 7, 1891, upon "A Case of Traumatic Tetanus," it may interest your readers to hear of a case of a similar character which came under my care. During the month of July, 1890, I was called to treat a severe case of idiopathic tetanus occurring in the person of a Scotchman, aged twenty-four years. I administered 20 grains of chloral with 30 grains of bromide of potassium every two hours, keeping the patient constantly asleep with the medicine, only arousing him for the purpose of administering nourishment. Under this treatment the patient made a good recovery.

M. W. SCOTT, M.D.

EMERADO, NORTH DAKOTA.

NEWS ITEMS.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM FEBRUARY 24 TO MARCH 2, 1891.

The following-named officers, having been found by army retiring boards incapacitated for active service, on account of disability incident to the service, are, by direction of the President, retired from active service from this date, under the provisions of section 1251, Revised Statutes: WILLIAM S. TREMAINE, *Major and Surgeon*, LEONARD S. LORING, *Major and Surgeon*.—Par. 19, *S. O. 45, A. G. O., Washington, D C.*, February 27, 1891.

By direction of the Secretary of War, HENRY M. CONN, *Major and Surgeon*, will report in person to the commanding officer, Fort Adams, Rhode Island, for temporary duty at that post, until the arrival of a successor to Samuel M. Horton, Major and Surgeon, when he will return to his proper station.—Par. 8, *S. O. 45, A. G. O., Washington, D. C.*, February 27, 1891.

FREDERICK W. ELDREY, *Captain and Assistant Surgeon*, having been examined by a board of officers, and found physically disqualified for the duties of a surgeon, with the rank of major, by reason of disability incident to the service, is, by direction of the President, retired from active service with the rank of major, under the provisions of the Act of Congress approved October 1, 1870, to date from February 24, 1891, the date from which he would have been promoted, by reason of seniority, if found qualified.—Par. 1, *S. O. 45, A. G. O., Washington, D. C.*, February 27, 1891.

The following-named officers, having been found by army retiring boards incapacitated for active service, on account of disability incident to the service, are, by direction of the President, retired under the provisions of section 1251, Revised Statutes: J. VICTOR DE HANNE, *Captain and Assistant Surgeon*, WILLIAM R. STEINMETZ, *Captain and Assistant Surgeon*.—Par. 18, *S. O. 44, A. G. O., Washington, D. C.*, February 26, 1891.

By direction of the Secretary of War, WILLIAM O. OWENS, JR., *Captain and Assistant Surgeon*, is relieved from further duty in the Department of the Missouri, and will report in person to the commanding officer, Jefferson Barracks, Missouri, for duty at that station, and by letter to the Superintendent of the Recruiting Service.—Par. 2, *S. O. 44, A. G. O., Washington, D. C.*, February 26, 1891.

The following-named officers, having been found by army retiring boards incapacitated for active service on account of disability incident to the service, are, by direction of the President, retired from active service this date, under the provisions of section 1251, Revised Statutes, JOHN DE B. W. GARDINER, *Captain and Assistant Surgeon;* ROBERT W. SHUFELDT, *Captain and Assistant Surgeon*.—Par. 12, *S. O. 43, A.G. O., Washington, D. C.*, February 25, 1891.

BLENCOME E. FRYER, *Lieutenant-Colonel and Assistant Medical Purveyor*, having been found incapacitated by the army retiring board, on account of disability incident to the service, is, by direction of the President, retired from active service, this date, under the provisions of section 1251, Revised Statutes.—Par. 15, *S. O. 42, A. G. O., Washington, D. C.*, February 24, 1891.

By direction of the Secretary of War, the leave of absence granted ALONZO R. CHAPIN, *Captain and Assistant Surgeon*, in S. O. No. 17, January 31, 1891, Department of Dakota, is extended one month.—*S. O. 41, A. G. O.*, February 20, 1891.

THE MEDICAL NEWS *will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.*

Local papers containing reports or news items should be marked.

Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course not necessarily for publication.

All communications relating to the editorial department of the NEWS *should be addressed to No. 1004 Walnut Street, Philadelphia.*

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ORIGINAL ARTICLES.

GASTRO-ENTEROSTOMY WITH RAWHIDE AND SEGMENTED RUBBER PLATES.

BY F. B. ROBINSON, B.S., M.D.,

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GASTRO-ENTEROSTOMY is an operation to establish a permanent fistula between the stomach and some part of the intestine. The term is a generic one, and under it may be included gastro-duodenostomy, gastro-jejunostomy, gastro-ileostomy, and gastro-colostomy. It signifies a communication of the cavity of the stomach with the lumen of the intestine through their respective contiguous walls, and is simply gastro-intestinal anastomosis.

The object of the operation is to overcome an obstruction, malignant or non-malignant, in the pylorus or in any part of the intestinal canal that can be excluded by the anastomosis. The advantage of gastro-enterostomy is that by means of it no structure need be removed. None of the functions of the digestive tract are destroyed in the operation, since physiologically the gut is only partially excluded. All the glands, nerves, bloodvessels, and lymphatics in the excluded intestine can perform their duty in the natural way, as the secretions of the mucous membrane can escape in both directions, and still aid in digestion. In short, gastro-enterostomy permits the contents of the stomach to pass into a new channel with the least possible disturbance. As a surgical procedure this operation possesses all known advantages—no important bloodvessel is cut, no vital function is destroyed, and no great nerve-plexus is injured, and it has the prime essential of all intestinal operations—it is short in duration. It may be considered a successful rival and substitute for pylorectomy. As the operation is a much less serious procedure than pylorectomy, it will have a greater field of usefulness, and will be oftener employed. In gastric cancer it has the great advantage of prolonging life with little or no suffering. It does this by putting the diseased parts in a state of rest. The disadvantage of gastro-enterostomy is also obvious—that is, it does not remove the disease. Whether the tumor be a slow-growing, non-malignant neoplasm, or the erratic proliferation of the malignant cell, gastro-enterostomy does not in the least interfere with the growth; hence, whatever the disease may be, it continues after the operation as before, except that it is not irritated by the passage of the contents of the stomach. It would be a disadvantage to a patient to do this operation for a non-malignant stricture of the pylorus if the stricture could be successfully dilated, for the natural channel is better than an artificial one. An artificial channel does not have a perfect sphincter, is liable to contractions and dilatations, and hence does not regulate the passage of the contents of the stomach.

When gastro-enterostomy has been done, it is difficult to obliterate the artificial fistula. When the dangerous pylorectomy is done it removes, as far as possible, the offending growth, and thus may prolong life; but the close proximity to vital organs, the difficulty of its execution, the prolonged exposure of the abdominal viscera, and the manipulations of great nerve-plexuses, all induce profound shock which endangers life. I saw the skilled surgeon, Professor Billroth, tie the portal vein by mistake while doing a pylorectomy, and thus cause the death of his patient. It may be stated in general that gastro-enterostomy has not fully satisfied the expectations of the profession, but that the surgeon who pays particular attention to the operation will not be very much disappointed. Careful observation clearly shows that the operation has not been done on very favorable subjects, and that the disease killed the patients while the operation benefited them. After the operation the patient suffers less, is more useful to himself and less of a burden to his fellows until his death, which is inevitable. Some patients are now alive several years after the operation.

So far as I have been able to ascertain, the operation of gastro-enterostomy has been performed upon man about 140 times, although some of these may be duplicate cases.

The operation was first performed in Vienna by Dr. Wölfler in 1881. He began the operation of pylorectomy, but being unable to complete it on account of the conditions, did a gastro-enterostomy to obviate the trouble. A hole was cut into the stomach and one into the gut, and the margins of the wound were united by the Czerny-Lembert stitch. The patient lived four months. Since that time Billroth, Lauenstein, Senn, Borker, Rydygier, Page, Hahn, Czerny, Luecke, Küster, Winslow, Stamm, Posteniski, Ransohoff, Monastryski, Rocowitz, and others have performed the operation. The most numerous and favorable reports of cases of gastro-enterostomy come from Professor

Luecke, of Strasburg, who with eight operations had seven recoveries.

The last report of Professor Billroth's that I have seen contained eight cases with three recoveries and five deaths. Professor Czerny reported in 1870 that he had done eleven gastro-enterostomies in his clinic with the following results: three died of septicæmia, four died of progressive marasmus or pneumonia in from two to four weeks after the operation, and four were benefited by the operation. At the same time he reported twelve cases of pylorectomy, of which eight recovered and four died. The medical world has long looked upon Professors Billroth and Czerny as the great advocates of pylorectomy, and hence it would be natural to expect equally authoritative and reliable results from this closely-related operation, gastro-enterostomy. Professor Czerny assisted Professor Billroth for several years in the clinic at Vienna, so that the work of these two men is similar. I know from visits to Professor Czerny's clinic in 1883 and Professor Billroth's in 1887, that their work represents the greatest skill, yet their results in these operations are not very flattering. I am convinced that this is chiefly due to late operations on unfavorable cases. It is reported, though I cannot show statistics, that Professor Senn's results have been more favorable. This I think is due to the fact that Professor Senn operates earlier in the course of the disease than is done in the clinics mentioned. Dr. Senn's wide experience in intestinal operations gives him skill and rapid execution—prime factors in gastro-enterostomy. However, the operation must be judged by the kind of cases upon which it is employed, and not merely by death-statistics. The results of gastro-enterostomy are on trial in every country. The final effects on life must be determined by the observation of many cases through a number of years of carefully-recorded work. Brilliant single cases, by good specialists, should not blind us to the generally-observed effects. Extended clinical research is the only mode of arriving at a conclusion upon the subject.

Two results of the operation are to be expected: one is the relief of suffering; the other, the ultimate cure of the obstruction by directing a part or all of the contents of the stomach into an artificial channel. In general it accomplishes these objects well.

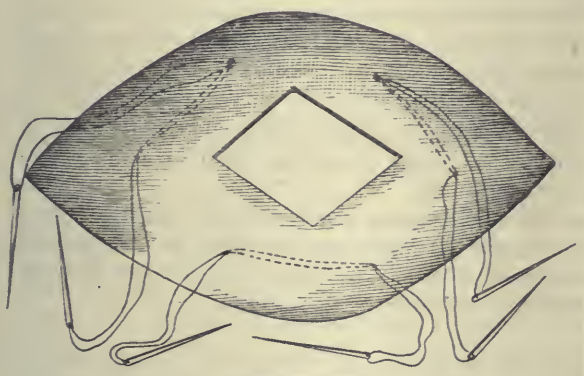
By the old method which Dr. Wölfler employed, gastro-enterostomy was, in my opinion, an unsafe operation. Its dangers lay in the length of time required to perform it and also in the yielding of the sutures; moreover, insufficient rest was given during repair of the wounds, due to non-fixation of the parts. The fistula is not held patent by the old method, while the plates now in use keep the fistula open, thus insuring a lumen large enough for free communication between the stomach and intestine. Experiments taught me some valuable lessons in this work, and by the liberal use of dogs I soon learned to avoid a number of errors. The experiments convinced me that the anastomoses should be made at the most dependent portion of the stomach in order that the food may escape from the stomach with greatest ease. If the anastomosis is made between the gut and the highest part of the stomach, or along the lesser curvature, or even midway up the organ, the animal suffers more or less until all food is expelled from the stomach. By anastomosing the lowest portion of the stomach to the bowel, the artificial fistula is kept sufficiently patulous to prevent obstruction.

The fistula is kept open mainly by the passage of food, flatus, and secretions, and when plates are used they aid in keeping it patent. The operation can be done with the ring and plates in thirty minutes, making it a safe and reliable surgical procedure. When we consider that thirty-five per cent. of *all* cancers attack the stomach, and that of gastric cancers sixty per cent. begin in the pylorus, the supreme importance of the operation is apparent. It seems reasonable that gastro-enterostomy should be substituted for pylorectomy in cancer of the pylorus, for autopsies demonstrate that one-fourth of pyloric carcinomas show secondary deposits in the liver. In such cases pylorectomy is almost useless, while the safer and more easily performed gastro-enterostomy will relieve indescribable suffering until the inevitable end. Even in non-malignant neoplasm, and in stenosis and occlusion of the pylorus, gastro-enterostomy has all the advantages of pylorectomy, besides producing less shock and violence to the system.

It required three years of experimentation to discover the proper material for the plates. In 1889 I began to use cartilage from the scapula of a heifer. At that time I had never heard or read of cartilage plates being employed for this purpose. I abandoned the cartilage plates in a short time, however, as they were absorbed too quickly when thin, and were too clumsy when thick. Some dogs died because of the too rapid absorption of the plates. Various forms of leather were then tried, as the reports of the experiments will show. Finally, I adopted rawhide, and the success of this material in gastro-enterostomy, as well as in many other operations, demonstrates that it is a proper material for securing an anastomosis in the alimentary canal. It is absorbed slowly, and causes coaptation of the large serous surface, producing complete fixation and rest of the parts—essentials for prompt and efficient healing. The rawhide plate is made by shaving the hair from the "green" hide of an ox, and cut-

ting it in strips an inch wide and two and one-half inches long. A diamond-shaped hole one-half by three-fourth inches is then made in the centre. From four to six sutures armed with needles are attached to the plate, and it is ready for use. I used linen thread and ordinary round sewing needles. The thread should be kept in carbolized water or alcohol. The plates can be used either dry or green. Any degree

FIG. 1.



Rawhide plate.

of thickness and hardness may be secured in drying the green hide. The size and rapidity of absorption of these plates can be adapted to the character and quality of the intestinal tract. I secured better results from the use of six than from four sutures. The death of a few dogs induces me to say that in intestinal anastomosis it is not wise to penetrate the incised gut-wall too far from its margin with the needle, as a fæcal fistula is apt to be produced.

Practical examples are always superior to theoretical precept, and so in this paper I will present practical work to demonstrate the operation, technique, material used, and the clinical and pathological conditions and results. The experiments consisted of ten gastro-enterostomies upon dogs with nine recoveries. The wounds were not dressed and the dogs lived together in a cellar.

EXPERIMENT No. 24.—Dog, female, weight twelve pounds. Animal chloroformed, belly shaved, and a loop of small intestine was drawn out through a three-inch median incision in the abdominal wall. An incision one inch in length was made in the convex border of the intestine, and a perforated sole-leather plate (one, by two and one-half inches) was inserted into the lumen of the bowel. The plate had four sutures attached to it, the lateral ones being armed with needles. The needles were passed from the inside of the gut outward about one-third of an inch from the margin of the wound, penetrating the thickness of the bowel wall. The index and the middle fingers were then introduced into the abdomen and a fold of the stomach drawn out, when another plate was introduced in a similar manner into the stomach. The stomach-plate and the incision were larger, and the needles penetrated the wall further from the margin of the stomach than in the previous operation. The serous surface over the plates was then scarified and the plates brought together, the corresponding sutures were tied, first the lowest lateral, then the two end ones, and finally the upper lateral, which brought together accurately the two incised wounds of the stomach and bowel. Just before tying the plates together the serous surfaces between them were sutured by a continuous Lembert stitch. A graft of unsevered omentum was applied closely around the anastomosis and sutured in position. The abdomen was closed by stitches one-third of an inch apart, including skin, muscles, fascia, and peritoneum. The dog made an uninterrupted recovery.

Seventeen days afterward the animal was killed by chloroform and the autopsy revealed the peritoneal cavity perfectly healthy, except a little cicatricial tissue immediately around the anastomosis due to local peritonitis. The graft was firmly adherent to the parts, enclosing the anastomosis in a strong sheath secure against perforation. The union between the surface of the anastomosed parts and the graft was complete, the results of proliferation of connective-tissue cells, bloodvessels, lymphatics, and nerves. Separation of the graft and serous surface was impossible, as it was completely adherent. The anastomosis was made five feet from the pylorus. The plates were in the same condition as when put in, with the exception of a slight softening, and the one in the stomach had commenced to dissolve. They had caused no ulceration by pressure. In seventeen days the fistula between the stomach and bowel had healed and a sphincter-like opening existed which freely admitted the thumb. There was considerable new tissue around its margin. The plates, linen, and sutures were still in position. Upon injecting water into the stomach nearly all of it passed through the artificial fistula. A bunch of straw had collected on the proximal side of the plates, but allowed the passage of food. Almost no food passed through the isolated bowel. It did not appear so vascular and was contracted. My observation is that the excluded membrane at first reacts and becomes congested and red, and later becomes pale. Of course the redness is more apparent, because the membrane is not stained by bile passing over it. The dog lost somewhat in weight.

Remarks.—The stomach-plate would have been absorbed and the intestinal-plate would have passed per rectum had the dog been allowed to live. Sole-leather, however, is not a good material for intestinal anastomosis. Such a dog fed on soft food will have no obstruction for months, at least. But if allowed to roam about, enteroliths will form on the proximal side and cause dangerous obstruction. The straw, bones, and shreds of food become entwined around the plates and will sometimes enlarge the artificial fistula to almost three times its original size. Practical experience teaches me that the artificial opening will contract to one-third or three-

fourths of its original size, and hence the incision must be made large enough to allow contraction. Linen thread does just as well as silk for this purpose.

EXPERIMENT No. 26—Operation was performed as in Experiment 24, and the dog was killed eighteen days after the operation. The abdominal viscera were healthy. The anastomosis was completely healed and the contents of the stomach had been passing through the new channel. The fistula easily admitted the thumb. It had contracted to one-third of its original size. The plates were still in position. Water injected into the stomach escaped almost entirely through the new channel. The excluded bowel was pale, contracted, and slightly stained with bile. The anastomosis was made three feet below the pylorus. The omental graft had formed firm adhesions. Adhesions had formed between the stomach and the ascending colon at a point just above the cæcum.

Remarks.—Sole-leather plates must be abandoned on account of their insolubility. The omental graft should be severed. All raw places in the abdominal cavity should be covered by peritoneal grafts, as bands of adhesions are apt to arise, which may catch and strangulate the intestines. Both operations demonstrate that fæcal accumulation will not occur in the excluded bowel, and that the opposition once raised in the French Academy of Medicine against gastro-enterostomy on account of this supposed accident is groundless. The fæces will take the direction of least resistance. The operation was completed in about thirty minutes, and the shock was not great. It seems that in three weeks the fistula had developed a kind of sphincter, due to the periodical dilatation and contraction caused by the irregular passage of the contents of the stomach and flatus. Pressure of the rings on the mucous membrane had caused no ulceration.

EXPERIMENT No. 28.—Dog, male, weight twenty pounds. This operation was conducted in the same manner as were the previous cases, with the exception that rawhide plates were used instead of the sole-leather ones. The dog made an uninterrupted recovery, and was killed on the eighteenth day after the operation. The abdominal organs were healthy. The omental graft had formed strong adhesions, the anastomosis was well established, and water injected into the stomach passed equally well through the new and old channel. The artificial fistula had contracted to about one-half of its original size, being sufficiently large to admit the index finger. The plates were entirely removed; two threads yet remained. The fistula felt and looked like a natural sphincter. In approaching the stomach the great omentum was torn through instead of being pushed to the left. About seven feet of small intestine had slipped through this aperture. This teaches us to avoid making such openings, or in case they are made, to suture them. They would, no doubt, strangulate the intestines if they remained open.

Remarks.—I do not know that rawhide has ever been used in anastomosis in man, but I have demonstrated by many experiments that it is an excellent material for this purpose. The plates never fail to be absorbed in the stomach or upper part of the intestine and if free from tannin they will be absorbed at any point in the alimentary canal.

By mistake I excluded four feet of small intestine in Experiment 28, but the excluded bowel was free from fæcal accumulation and had become atrophied. The advice of Luecke and Lauenstein, to seize the first loop of bowel which appears at the abdominal opening, should be discarded. It is not justifiable, because the loop might be in the lower end of the ileum—a mistake which Lauenstein made, and on account of which his patient died in a few weeks from marasmus.

The duodenum is reached by pushing the omentum to the left, and then searching for the pylorus or the end of the pancreas, which serve as landmarks for this part of the intestine.

EXPERIMENT No. 34.—Dog, male, weight twenty pounds. Operation performed in the same manner as before, rawhide plates being again used. Dog made a good recovery, and was killed in eleven days. The abdominal organs were healthy. I had intended to anastomose the transverse colon with the stomach, but the autopsy showed that the rectum was united to the stomach, hence, the alimentary canal consisted of the stomach and part of the rectum. The stomach had been dilated to one-fifth larger than normal, by the constant dragging upon it. When water was poured into the stomach it all passed through the artificial opening. The fistula felt like a sphincter, and admitted the index-finger. It had contracted to one-half of the original size. Though nearly all of the bowel was excluded, the dog had neither marasmus nor fæcal accumulation. The plates were entirely absorbed.

Remarks.—The mistake of seizing the rectum for the transverse colon should be remembered. Eventration, however, is the only proper method of accurately locating the parts to be anastomosed. The bowel should be passed through the fingers and carefully inspected. This experiment demonstrates that rawhide is a proper material for use in gastro-enterostomy.

EXPERIMENT No. 36.—Dog, female, weight thirty pounds. I had performed a splenectomy seventy-nine days previously to this operation, and had extirpated the cæcum thirty-five days previously to the gastro-enterostomy. Rawhide plates were introduced and secured by six ligatures. The dog recovered from the operation and ate voraciously, but died on the fifteenth day from marasmus. She lost considerable flesh from the first operation, much from the second, and more from the third.

The autopsy showed that each wound was completely healed. The plates were entirely absorbed. The anastomosis was well established and the artificial fistula was contracted to one-half of its original size and had a sphincter-like appearance, admitting the little finger. The stomach was attached to the jejunum two feet from the pylorus. Scarcely a vestige of fat could be seen in the dog. The peritoneal graft that was applied to the anastomosis had thrown out a wall of exudate which completely sealed the wound and held the parts firmly in place. All that remained of the spleen was a contracted cicatrix. Nothing remained in the place of the extirpated cæcum except a few scars.

Experiment No. 39.—Dog, male, weight twenty-five pounds. The material used in this operation was segmented rubber rings armed with six sutures and six needles, the tubes being held together by four strands of green rawhide. The rings were introduced into the bowel and stomach in the same manner as the plates. The animal completely recovered and was killed eight days after the operation. It lost four pounds in this time from marasmus. The abdominal organs healthy; bands and adhesions existed. The rings were gone and the anastomosis was perfect. Water passed equally well through the natural and artificial channel. The omental graft, three by four inches in size, was torn from the part of the omentum which lay over the stomach, but had firmly adhered to the parts. A curious accident, similar to the one mentioned in a previous experiment, occurred after this operation. Eight feet of the small intestine had protruded through the aperture in the great omentum and were tightly held by the constricting band.

Remarks.—This accident teaches us that either the graft should be taken from the edge of the omentum, or that the omental aperture should be resutured.

Experiment No. 50.—Dog, male, weight twenty pounds. Rawhide was used in this operation. The animal made an uninterrupted recovery and was killed in seven days. The omental graft was firmly adherent. The stomach plate had completely disappeared and the intestinal plate was about one-fourth absorbed. These plates were made of rawhide belt-leather, which contained considerable tannin. The anastomosis had completely healed, and the passage of the stomach contents through the new channel was well established. The fistula was contracted to one-third of its original size. Two feet of bowel were excluded. The omentum was found attached to the median abdominal incision.

Experiment No. 52.—Dog, male, weight twenty pounds. The material used for this operation was green rawhide from which the hair had been shaved. The plates were armed with the usual number of sutures. The opening in the intestine was one inch, and that in the stomach one and a half inches in diameter. The serous surfaces over the plates were well scarified, and the plates carefully tied together. An omental graft was applied and held in position by sutures. (The plates should always be put in the convex side of the bowel.) The dog made an uninterrupted recovery. He was killed eight days after the operation. The abdominal organs appeared healthy; the healing of the anastomosis was perfect and the omental graft was firmly adherent. As far as we could ascertain, all of the contents of the stomach had been passing by the new channel. The opening had contracted to one-half of its original size, and was in a firm sphincter-like condition. The anastomosis was made three feet below the pylorus.

Experiment No. 21.—Dog, male, weight thirty-five pounds. The same material was used in this as in the previous experiment. The dog died in fifty hours, from a fæcal fistula at the site of the plate. The stomach-plate was about one-fourth absorbed, and nearly all of the absorption had taken place at the pyloric end. The intestinal plate was softened, but not absorbed. The omental graft had healed well, except at the point of septic infection.

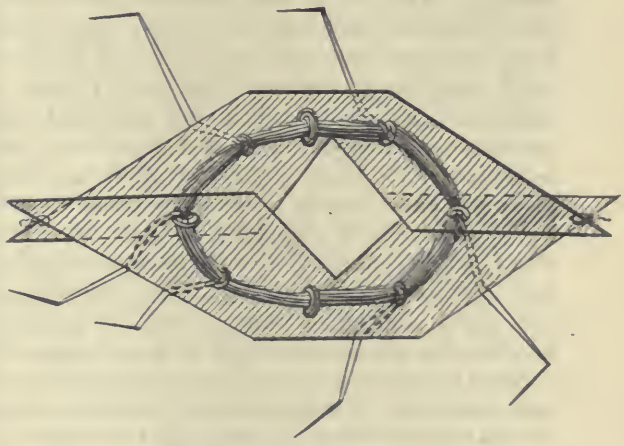
Remarks.—I think the result might have been different had I secured the plate in position with six instead of four sutures.

For the past eight months I have been using other kinds of plates for intestinal anastomosis, hoping that I might discover a still better material than rawhide, though it had proved so far almost a perfect success. I wished to secure something that is cheaper and more easily prepared than rawhide.

After considerable investigation I discovered that segments of thin flat rubber and a ring of rawhide make the best plates that I have yet tried.

I have used rings of sheepskin and catgut instead of the rawhide, but find that one is just as good as the other.

Fig. 2.



Segmented rubber plate.

I have called this new plate the segmented rubber plate. It is made of rubber bands, which should be from two and a half to three inches long, three-quarters of an inch wide, and about one-twelfth of an inch thick. Very thin rubber is best, a piece of an Esmarch bandage being sufficient. The corners of the rubber are clipped off from one side of each seg-

ment, and a triangular piece is cut out of the opposite side of the segments to allow of a channel for the passage of fæces. The rubber segments should then be stitched together at each end with catgut. After making a ring of rawhide, catgut, or sheepskin, it should be stitched to the sides of the rubber plate with two catgut sutures; thus the rubber plate and ring are held together by catgut only. Now apply the six sutures armed with round needles and the plate is ready for use. Dr. Matas, of New Orleans, kindly sent me his solid catgut ring, which he thinks is a good ring to apply to my segmented rubber plate. Its principle is about the same as the ring of rawhide that I used a year ago.

The claim I make for this segmented rubber plate is that it has been successful in my experiments, that it is easily made, and it is absorbed in the proper length of time. It is superior to a ring, as all plates are. It brings into coaptation the largest amount of serous surfaces and holds them closely together.

The plate produces uniform pressure in all directions. There are no uneven surfaces to cause gangrene or sloughing of the gut, which would produce fæcal fistula. The plate produces the most perfect fixation of the parts and allows healing to go on. An essential in these operations is fixation for a certain length of time, as one cannot rely on a definite time for the appearance of plastic exudate. This exudate may be thrown out in a few hours or be delayed more than twenty-four hours. It is exceedingly variable in quantity, and the parts require close approximation so as to prevent leakage. After about one hundred and seventy-five operations extending over nearly three years, I am convinced that a plate should not be absorbed for at least four or five days, and for this reason I abandoned cartilage, which was absorbed too quickly. Some of the dogs died from fæcal fistulæ caused by too rapid absorption of the cartilage plate. I know that in some cases complications have arisen after a coaptation of three days, and thus I put the proper limit of continuous approximation at from four to five days. The rubber plates can easily be made to last a week by properly selecting the material of which they are composed.

Since the introduction of these plates two errors have prevailed. The first error is that rubber which is too heavy is used. I sent a pair of plates by request to a surgeon who wrote that he supposed I had sent him a *model* of the rubber plate, as he considered the rubber bands attached to the plate too light for use.

Heavy rubber will cause gangrene of the gut by its constant elastic pressure. The rubber plate is simply to exert the pressure uniformly in all directions, otherwise Dr. Matas's solid catgut ring, Dr. Brokaw's segmented rubber ring, the author's rawhide ring, or Davis's catgut mats would be just as good. But no ring is as useful as a plate, and no plates, are as cheap and easily made as the rawhide or segmented rubber plate. I have had the greatest success with rubber bands, of which eighteen placed against one another make a plate about an inch thick. Hence the rubber bands composing the plate should be from one-twentieth to one-twelfth of an inch thick.

The other equally erroneous impression is in regard to the size of the holes in the plate through which the needles are passed. Six of these holes are punched in the plate, and should be about one-eighth of an inch in diameter or about the size of a crow quill The purpose of these large holes is to allow the knots and the undissolved part of the ring to become easily disengaged from the plate, as they would aid in producing an obstruction if retained. It must be remembered that if a knot catches in the rubber it will remain in that position until it sloughs through the edge of the artificial fistula, and I have had such threads remain in the edges of the fistula for more than fifty days. Hence, for this reason use thin rubber and make large round holes in the plates. Let me reiterate that the artificial fistula should be made large, for it will generally contract from one-fifth to one-half of its original size; scarify without exception, and always apply an omental graft over the anastomosis.

I have used the segmented rubber plates in many experiments and will report one case of gastro-enterostomy to illustrate the technique.

FIG. 3.

Plates *in situ*. Ligatures ready to tie.

EXPERIMENT NO. 153.—Dog, male, weight twenty pounds. A segmented rubber plate was inserted

into an incision in the stomach one and a half inches in length, and the six needles passed from within outward, penetrating the entire wall of the stomach about one-third of an inch from the margin of the wound. A loop of the small intestine was then withdrawn from the abdominal opening and an incision one inch in length made eighteen inches below the pylorus, into which a segmented plate was inserted. (Fig. 3.)

The two serous surfaces over the plates were scarified and the plates brought into close apposition.

An unsevered omental graft was applied over the seat of operation and fixed in position by a few fine sutures. The recovery of this dog was remarkable, but on the eleventh day after the operation he escaped and we never saw him again. He actually gained flesh during the ten days of his confinement.

It may be said that there is only slight shock succeeding this operation when it is rapidly and skilfully done with plates and the abdominal viscera manipulated as little as possible. In one case the dog nearly died three times during the operation, simply from the dragging on the stomach. No doubt much of the shock in these cases is caused by exposure of the viscera to a lower temperature and the manipulation of the parts.

I wish here to thank Mr. Ame Zetlitz and Dr. C. S. Miller for their able and kind assistance during the past year. Dr. Gillette also aided in some of the experiments.

A CONTRIBUTION TO THE STUDY OF THE COMPLICATIONS OF ACUTE OTITIS MEDIA.[1]

By H. V. WÜRDEMANN, M.D.,
of Milwaukee.

The following case exhibits an unusual number and an alarming severity of those complications which occasionally accompany otitis media, but which are somewhat rare in the course of acute inflammation:

A. M., a painter, aged fifty years, had an attack of epidemic influenza two weeks before he came under my care, which was followed by severe ear symptoms on the left side. The drum-membrane ruptured six days afterward, and great relief from the pain was experienced. The patient had no medical attendance until this time, when his family physician was called, and the case was sent to me for treatment of the ear. The patient's temperature was 101°, and there was great pain over the scalp and shoulder of the left side, with profuse discharge from the meatus. In short, all the usual symptoms of acute suppuration of the ear were present in an exaggerated form. The next day the mastoid area of the left side was red, tender, and somewhat swollen. He complained of visual disturbance, which proved, upon examination, to be left lateral hæmianopsia. The visual field was taken by the fingers at this and at each subsequent examination. Muscæ volitantes also annoyed the patient.

Several attacks of epistaxis of alarming severity occurred during the night. The fever was at times interrupted by chills, and excruciating headache helped to make the patient's condition most deplorable. Phlebitis of the brain sinuses was suspected, and the symptoms pointed to inflammation of the cavernus sinus.[1]

In the course of a few days, under the use of antiphlogistic treatment, these alarming symptoms disappeared, although the pain was at times so intense as to require morphine for its relief. The pain was limited to the left side of the head and extended over the entire distribution of the fifth nerve. All the teeth of the upper jaw of the left side ached.

One week later an inflammation of the external auditory meatus set in, which required the use of leeches and incisions for its relief. In the beginning of the third week a sequestrum of bone seven mm. in length and three mm. in width at its widest part came away in the discharge. The locality from which it came could not be recognized, either from examination of the specimen or from inspection of the tympanum. The discharge was very slight and the perforation in the drum-membrane appeared to be closing. The patient had been steadily growing more deaf upon this side, and in the beginning of the fourth week he complained greatly of increased tinnitus and marked dizziness. At this time another sequestrum was removed by forceps, it having been found to be loose. A few days later no pus was observed in the meatus. The patient was not seen again for about a month, when he returned with the meatus full of pus. He stated that the ear had been dry until a day or two before. This discharge ceased in several days under the ordinary antiseptic treatment.

Two months from the date upon which he was first seen he consulted me, complaining of great pain in the head and of excessive dizziness. He was "flighty" in language, but managed to inform me that he had fallen several times on the way to my office, which was but three squares from his residence. He had been absolutely deaf on the left side for some time. I advised him to return at once to his home. On leaving my office he wandered mechanically down town, where he was arrested as "drunk" by an intelligent policemen and sent to the station-house. After a short detention his condition was recognized to be the result of sickness and not of alcohol, and he was turned loose on the street, to make his way home as best he might, as he claimed to know the way. After four hours' exposure he at length reached home, having fallen a number of times on the way. I was called to see him that night, and found him in bed with delirum and high temperature. In consultation with Dr. William Mackie, meningitis was determined to be the cause of these symptoms. The patient fully recovered from this trouble, after a tedious convalescence. Absolute

[1] Read before the Northwestern Wisconsin Medical Society, at Wausau, September 8, 1890.

[1] Politzer: Ohrenheilkunde, p. 376, ed. 1887.

deafness has continued, no assistance being rendered by artificial aids. The tinnitus aurium has disappeared entirely, but the vertigo at the present writing, nine months from the inception of the disease, is as pronounced as ever. The patient in walking can prevent himself from falling to the left only by a strong effort at each step. There has been no discharge from the ear for six months, and for four months the membrana tympani has been completely restored.

There has been an entire destruction of the auditory apparatus of the left side.

MEDICAL CASES IN THE COURTS.

BY HENRY A. RILEY, ESQ.,
OF NEW YORK.

THE State of Kansas is old enough, it seems, for cases involving the perpetuity of cemeteries to get into the courts. In a recent case it was claimed that the donors of the land had rights which were not extinguished when the cemetery was dedicated, and that, under certain circumstances, they could claim a reversion of the land and the right to the use of it in the meantime. The judgment of the court is interesting, and we quote as follows: "In the case at bar the donors have devoted the whole use of this land for the purpose of continuous burials and as a place for the repose and memory of the dead. In my judgment no conceivable right of private beneficial enjoyment would remain in the donors, as owners of the fee, which would not be inconsistent with the right of sepulture to which they have devoted it. Crops for their gain and sustenance could not be grown upon its surface, nor could dwellings for their shelter and enjoyment be erected within its limits, without interfering with the solemn use, the sanctity and repose, implied in the purpose of the dedication. The sunshine and laughter of inhabited dwellings, as well as the 'toil and endeavor' of business pursuits, are out of place in cemeteries of the dead.

"According to our law governing the subject of ejectment, the plaintiff cannot prevail unless he has the immediate right of possession at the commencement of his action.

"As long as the rights of sepulture parted with in the donation are outstanding in the public the plaintiffs have no right to recover the use of the land for any enjoyment or purpose of their own."

Hon. Henry Hitchcock, President of the American Bar Association, gave, at the meeting held this year, a detailed statement of legislation during the previous twelve months in the different States, which is of much value to any one desiring to observe the drift of lawmaking.

The meeting was held some months ago, but the information will not seem stale even at this late date.

On the subject of the public health Mr. Hitchcock gives the following interesting statement: "The care of public health is a subject of various statutes in twelve States. New Jersey, Washington, and North Dakota created State Boards of Medical Examiners, without a license from whom no person may lawfully practise medicine, and a license may be refused or revoked for unprofessional or immoral conduct, and in North Dakota 'for publicly advertising special ability to treat or to cure diseases, which, in the opinion of said board, it is impossible to cure,' though an appeal to the Governor is permitted.

"Another act of North Dakota, while recognizing the needs of anatomical science, imposes wise and humane restrictions upon its votaries. Kentucky, by an amendatory act, transfers the licensing power from the faculties of legally-chartered medical schools and the State Board of Health, but forbids any travelling empiric to register or practise medicine within the State.

"As indicating the progress of public sentiment, I recall, with some amusement, a conversation ten or fifteen years ago with a legislator in another State, who indignantly refused to support a similar statute on the ground that if a free American citizen chose to consult a quack doctor, it was nobody's affair but his own; but that State has now, for years, required physicians and surgeons, dentists and druggists alike to be registered and licensed by the State Board of Health. A like growth of public sentiment in another direction is indicated, and the old maxim, 'that prevention is better than cure,' is exemplified by a New Jersey statute authorizing the incorporation, by certificate, of associations for promoting the interests of cycling and athletic sports. New Jersey also enlarges the powers of township boards of health, making further provision against danger from epidemics or contagious diseases in public and private schools.

"New Jersey, Virginia, and North Dakota also forbid the practice of dentistry without previous examination, and license from the State Board of Dental Examiners.

"The sale of drugs is regulated, and their adulteration is made a criminal offence by amendatory or original statutes in Georgia, New Hampshire, New Jersey, North Dakota, Rhode Island, Ohio, and South Dakota; in all of which States it is unlawful for any but a registered and licensed pharmacist to sell drugs, and severe penalties are imposed for their adulteration. In Georgia every manufacturer or vendor of drugs must, on demand by any person interested, furnish a sample for analysis to the State Board of Pharmacy, who are required to prosecute in case of adulteration. Ohio declares what shall be the standard of drugs for purity, and what con-

stitutes the adulteration of food. In New Jersey a vendor of adulterated drugs may defend by showing that he procured them in good faith from a resident of the State, with warranty in a form prescribed—the giving of a false warranty being also a misdemeanor."

The microbes, in their devastating course, have entered the State of Texas, and the Supreme Court of that State has been called on to decide whether a manufacturer, who calls his compound "Microbe Killer," can prevent a rival manufacturer from calling his panacea "Microbe Destroyer." The first designation was placed on a yellow label with a black border, while the second was printed on a white label with a red border, and, in addition, had a pleasing representation of a man striking a skeleton with a club. The court, after ample deliberation, decided that it could not interfere, and that there was no violation of the trade-mark laws.

OPEN DIVISION IN STRANGULATED INGUINAL HERNIA.

By BENJAMIN T. SHIMWELL, M.D.,
DEMONSTRATOR OF SURGERY IN THE MEDICO-CHIRURGICAL COLLEGE, PHILADELPHIA.

The classical operation for strangulated inguinal hernia has only partly met the requirements. The advance made in surgery, more especially in that of the abdomen, has allowed a greater liberty of action, which seems not to have been properly taken advantage of in the treatment of this condition.

This paper is written to show the advantage gained by the open method of operating—that is, cutting directly through all the tissues of the tumor, including the external ring, internal ring, and, if necessary, the abdominal wall, converting a simple herniotomy into a hernio-laparotomy.

The condition of the protruding gut is modified by its preëxisting condition, the size of the protrusion, the length of time of strangulation, and the position of the constriction. An old incarcerated hernia with a sudden increase of the protrusion and consequent constriction gives an abnormality in relation of structures and their component characters, that has no resemblance to an acute case and causes a difference in the ultimate results of treatment. The size of the protrusion is not so much a factor in causing constitutional symptoms as is supposed. I have seen as violent symptoms in a small protrusion as in one of greater size.

The length of time of constriction also modifies structural capacities, and directly influences the result.

The point of constriction may be either at the external or internal opening, or, what is often overlooked, the true constriction may be the neck of the peritoneal sac, the inguinal rings acting merely as a barrier to the return of the gut and not as a true constrictor.

A careful consideration of these propositions opens a field of thought that must of necessity show the inefficiency of the nicking of the external ring from below.

The extension of the incision cannot be said to complicate matters by increasing the risks. It is settled beyond peradventure, that careful increase of a few inches in the length of an incision, whether in the abdomen or anywhere else, does not increase the risks.

Compare the old method with the certainty of work and view of field, the definite knowledge of conditions of the injured gut, and the lessening of risks which were due to handling of gut by the drawing down preparatory to reduction.

Would an abdominal surgeon operate in a case with marked adhesions through an opening of the same size that he would in a simple uncomplicated oöphorectomy? Working in the dark is prolific of bad results. It is not in the power of any man who operates for strangulated hernia by the old method to tell with certainty the condition of the bowel, and thus it is that many cases end in death by inflammation of, or ulceration and necrosis of the bowel at the point of constriction. The condition of the congested bowel is the point always to be regarded in determining whether it will regain its normal state. To me it seems that not enough importance is laid upon the condition of the tissue at the point of constriction. There is often an amount of injury done that causes the most serious results. There is the question of necrosis, which is one of importance, and then also the loss of nerve vitality by constant constriction, which is often marked. I have seen this persistent at the end of days, the obstruction still remaining.

Paralysis of a portion of the bowel prevents fæcal circulation; the bowel forces its contents to this point, and then is unable to send them further. Gas and fæcal matter will enter a paralyzed portion. Continuous action is a necessity. As a proof of this point, a patient upon whom I had performed hysterectomy died suddenly from tympany produced by obstruction of the bowels due to paralysis. The case was one in which every means were tried to relieve the condition.

The post-mortem examination discovered the point of paralysis in the lower portion of the ileum. The bowel walls were flaccid at this position for about two inches. Above this the whole canal was enormously distended, while below to the anus it was entirely empty. Experiments on dogs have shown the same results.

It is in the ability to appreciate these conditions properly that the open incision has its

strongest advantages. A full inspection of the injured bowel indicates the treatment where special conditions arise, as does the question of resection when gangrene is imminent, or in those cases in which it is apparent that the point of constriction will not regain its tone. The importance of resection in the latter cases has been impressed upon me by the condition of those that I have seen. This loss of tone is apt to be present in old incarcerated hernias, in which narrowing of the canal by pressure has altered the structure of the walls, and in such cases the increased constriction has injured an already impoverished part. Another advantage is the certainty of the complete return of the protruded gut into the abdomen.

The possibility of a radical cure is to be considered. I have one case that I operated on nearly two years ago, which seems to approach a radical cure. This was a case of true hernio-laparotomy. The internal ring was carefully sewn together, the floor of the inguinal canal was curetted and closed by buried sutures which included the external ring, the superficial surfaces continuous with the abdominal wall being brought together with silkworm-gut. The abdominal cavity was cut off at once and coaptation was so perfect that it tolerated the patient's tearing off all his dressings, walking down stairs and sitting on the front steps in the early morning of the fourth day. When I last saw him he was doing active work and was not wearing a truss.

The closing of the canal can be done, if so desired, by retention of the sac in the upper portion of the canal, using any of the methods suggested. In old incarcerated cases the adherent sac can be separated from the surrounding tissues, leaving a good surface for union, while the sac can still be retained at the internal ring, its serous surfaces simply in contact, or by the purse-string method. The open treatment, the value of which is still doubtful, can be tried.

If the abdominal walls have been divided, care must be exercised to bring into apposition the peritoneum and transversalis fascia, also the superficial fascias that make Poupart's ligament. The latter procedure is a necessity for strength, the sutures entering well into the pubic side to hold the divided ligament firmly together. If this is well done, when union has taken place the ligament can be readily defined and its relations are found to be continuous. Drainage of the pelvis is a necessity if exudation is apt to occur.

1253 SOUTH SEVENTEENTH ST.

Treatment of Acute Vomiting of Pregnancy.—The *Journal de Médecine de Paris* recommends five drops of a solution made up of equal parts of iodine and chloroform, to be taken at the time of eating by women suffering from the vomiting of pregnancy.

A CLINICAL STUDY OF ERGOT.

BY JOHN C. HEMMETER, PH.D., M.B., M.D.,
OF BALTIMORE.

(Concluded from page 269.)

FEW facts have been so well established clinically as the decided effect of ergot on hæmoptysis. Sparjani and Cabini have reported cases of pulmonary hæmorrhage that were almost instantaneously checked by this drug;[1] and Bazzani,[2] Jamieson,[3] and Stewart[4] have put on record a number of cases of hæmoptysis of an exaggerated type that ceased at once upon the hypodermic administration of ergot. This treatment has also found strong advocates in those excellent clinicians, Oppolzer[5] and Thompson.[6]

We have taken the opportunity of testing the efficacy of secale in two cases of dysentery that proved rebellious to treatment with astringents, bismuth, opiates, and even to flushing of the large intestine. After the drug was persistently used the hæmorrhage ceased and recovery occurred. These cases presented no special clinical or physiological interest, except that it seemed that when the secale was injected through a long rectal tube, it had a more immediate and lasting effect than when given by the mouth or hypodermically. A strict milk diet was insisted upon during the entire treatment.

Successful results of the treatment of chronic diarrhœa by secale have been reported.[7]

O. Rosenbach has given secale a place in the therapy of aortic insufficiency and so-called idiopathic dilatation of the heart.[8] As a consequence of the increased pressure of the hypertrophied ventricle, and under the influence of the increased quantity of blood which is thrown into the arteries, the latter are dilated and lose their contractility, so that a very important factor in the propulsion of blood is lost. Rosenbach claims to have obtained good results during the period of disturbed compensation by stimulating the aortic walls to greater activity. He has also used ergot in cases of arterio-sclerosis, in which, as he claims, the incapacity of the diseased portions of the arterial system must be compensated for by an increased activity of those portions that remain healthy. The benefit obtained was shown by the effects on the pulse, which became more regular and slower with a diminution of the attacks of dyspnœa and palpitation. The objections to Rosenbach's treatment are that

[1] Annali Universali da Medecina, 1880.
[2] Ibid., February, 1881.
[3] Bull. Gén. de Thérapeutique, 1871, t. lxxxi. p. 100.
[4] Edinburgh Med. and Surg. Journ., 1871, xvii. 511.
[5] Allgemeine Wiener med. Zeitung, Bd. xxxiii.
[6] British Medical Journal, September, 1872.
[7] See Schmidt's Jahrbücher, December, 1871, and the Lancet, 1876, ii. p. 409.
[8] Berlin. klin. Wochenschrift, Band ii., Abtheil 1, August, 1887.

dilatation of the heart may be the result, and not the cause, of increased peripheral resistance; that ergot in physiological doses increases endocardial pressure, which may have been the cause of the dilatation, and that in toxic doses it is a heart poison, or injures the ganglia. In disturbed compensation we are in many cases forced to conclude that the ganglia are at fault, and that the breaking down is nervous, not muscular.[9] In one case of aortic insufficiency with marked Corrigan's pulse, Dr. Alan P. Smith, of Baltimore, and the writer witnessed marked improvement of the symptoms under ergot, after digitalis had failed. The aggravated symptoms in this case resulted from cerebral congestion; at times the patient was unable to see the window, and at her best complained of constant headache, giddiness, muscæ volitantes, and stabbing pains over the heart and extending down the left arm. The improvement lasted for six months, during which period the secale was repeated but once. At present, eight months after secale was first given, the patient is doing well. In a second case, one of mitral regurgitation, with a tendency to pulmonary engorgement and hæmorrhage, ergot proved a useful drug. There is one form of abnormal pulse which is, without exception, very much improved, if it does not disappear under secale—this is the dicrotic pulse. This pulse is caused by a very low degree of pressure in the arterial system, and a very short systole. In fever the elevated temperature causes a low arterial pressure, the vessels being dilated, the systolic contractions being too short and following each other too rapidly, constituting the conditions for dicrotism. Ergot fulfils all the requirements necessary to counteract these deviations from the normal. It increases arterial pressure, renders the systole slower, gives the vessels increased tonicity, and reduces the temperature.

We hoped to be able to present pulse-tracings and clinical charts from cases of meningitis and catarrhal pneumonia, showing the fall of temperature and reduction in number of the pulse-beats after hypodermic injections of ergotole in a case of meningitis, and also from a case of catarrhal pneumonia, showing slowing of the pulse-rate with increased tonicity and diminution of the number of respirations, but want of space forbids their insertion.

It is possible, by careful and long-continued ophthalmoscopic study of the fundus of the eyes of epileptic patients, to form an accurate conception of the dimensions of the vessels of the retina. The vessels can in fact be measured, if it becomes necessary, by an ophthalmometric attachment to the instrument. For these observations such patients are best adapted who, in addition to epileptic seizures, present a more or less constant congestion and engorgement of one fundus, right or left, during the intervals between the attacks. When patients afflicted with *grand mal* complain of hemicrania during the intervals of rest and health, a careful ophthalmoscopic comparison of the two fundi should be made. If congestion is evident in one or both fundi, ergot should be tried, and should the drug produce its characteristic effect and the constriction of the arterioles and capillaries of the retina be evident after its administration (after 3 fluidrachms of fluid extract or 2 fluidrachms of ergotole have been given), the drug should by all means enter into the treatment of these particular cases. It should be borne in mind that the ophthalmoscopic study of the action of ergot should be made in the intervals between the seizures. We have made these statements on the basis of over two years' study of more than fifty epileptics at the Baltimore Insane Hospital. Among the symptoms that should direct attention to possible cerebral congestion are contracted pupil, hemiopia and diplopia, supraorbital pain and narrowing of the field of vision, and aggravation of the symptoms by the recumbent position and acts involving deep inspiration, as blowing, sneezing, etc. The restriction of the visual field is often present on the side on which the hemicrania is complained of. In the cases of epilepsy that have been specified, combined treatment by bromides and ergot did not, it is true, cure a single case, but it greatly reduced the number of attacks, which is one step in the right direction. The records of epileptic attacks at the Baltimore Insane Hospital during the period referred to, were kept as carefully as possible by day and night nurses. The following is a tabulated statement of seizures occurring from April to September, 1886, inclusive, in four congestive epileptics, two males and two females. Under simple bromide treatment the number of attacks in these six months was 121. In the following six months the bromides were combined with ergot in the treatment of the same patients, and the number of attacks during this period was 31.

Table of epileptic seizures in four patients under simple bromide treatment at the Baltimore Insane Hospital, from April to September, 1886, inclusive:

	April.	May.	June.	July.	Aug.	Sept.	TOTAL.
Max R. . . .	6	4	6	7	8	5	36
Walter F. . . .	3	1	7	8	4	1	24
Dora Y. . . .	1	6	1	4	8	6	26
Rosa M. . . .	4	9	9	6	3	4	35

Table of epileptic seizures in four patients treated with a combination of bromides and ergot, from October, 1886, to March, 1887, inclusive:

	Oct.	Nov.	Dec.	Jan.	Feb	Mar.	TOTAL.
Max R. . . .	4	2	..	4	1	..	11
Walter F. . . .	1	1	2	..	2	..	6
Dora Y. . . .	1	2	1	..	..	..	4
Rosa M. . . .	2	3	..	3	2	..	10

[1] Osler: American System of Medicine, vol. iii. p. 629.

In our experience, cases of simple hemicrania, with the ophthalmoscopic appearances and other evidences of cerebral hyperæmia, have been relieved by the use of ergot without any other medication. In a case of migraine associated with a very irritable stomach, ergotole hypodermically gave gratifying results. In brief, whenever uncomplicated cerebral hyperæmia can be definitely discovered, ergot is the drug *par excellence*. In all cases of cerebral or spinal hyperæmia it is important to remember that ergot is a drug for the relief of acute symptoms only, and should not be long continued.

In the course of our studies upon ergot we have had the opportunity to observe its effects on three cases of posterior spinal sclerosis in which the symptoms became worse every time the drug was given and improved as soon as it was discontinued. One of the cases was at Bay View Hospital, the other two were in private practice. In a man aged forty-two years, who could walk fairly well and whose sight was good, who received ergot to relieve his lightning-pains, these pains became intolerable after the third drachm of fluid extract of secale cornutum had been taken. The patient often lost his equilibrium, and fell repeatedly from inability of coördination ; a persistent nausea prevented further ingestion of the medicine, after which the man improved. On the following day we resumed the ergot, and the same symptoms were repeated, the patient even showing evidences of ptosis. Being convinced that the medicine was the cause of the trouble, it was discarded, and the case once more improved. About six months subsequently, the same patient, who had in the meantime consulted a northern specialist, returned with aggravated ataxic symptoms, ptosis, and evidences of mental alienation. He was taking a dark-red medicine, which we found, on writing to the druggist who had compounded it, to contain a half-drachm of fluid extract of ergot to the dose. This medicine was stopped, the man improving decidedly within a week, the ptosis disappearing.

The patient in Bay View Asylum had a typical iridoplegia, an Argyll-Robertson pupil, the belt sensation, and a paretic gait, but his cutaneous sensibility was not impaired, tingling and formication in the feet being the only sensory disturbances.

The patient had not complained of pain. After taking ergot (half-drachm of fluid extract three times daily) for one week he suffered from agonizing lancinating pains and a burning sensation over the sacrum. Movement of the lower extremities was almost impossible, and marked anæsthesia was found all over his legs. Incontinence of urine was present, and he also complained of seeing things double. These symptoms improved as soon as the secale was stopped, and returned with almost equal severity four months later when he was again recommended to take it.

In a third case of locomotor ataxia similar aggravation of symptoms occurred under ergot; the symptoms were not, however, so severe, as the patient had learned to recognize the smell and taste of the fluid extract of ergot, which had formerly been given to him in drops, and refused to take it, asserting that it "always made him worse."

We are forced to the belief, from these observations and those of others that in spinal and cerebral diseases ergot is a dangerous agent to use if decided histological changes have occurred in the brain or cord. Benefit may be expected from it in only certain well-defined congestive epilepsies, in simple hyperæmia of the brain and cord, and in congestive hemicrania.

After carefully studying the literature of this question, we find that cases of locomotor ataxia have already been reported in which the symptoms were directly aggravated by the use of ergot.[1]

From what we have learned concerning the damaging influence of this agent on general metabolism, and from the fact that its action is solely exerted, in a manner which cannot be experimentally established, by producing certain molecular, perhaps chemical, changes in the central nervous organs, we may argue that it should not be employed in acute myelitis, in acute spinal meningitis, in infantile spinal paralysis, or in posterior spinal sclerosis. In the psychoses it should find application only to relieve acute congestive symptoms, and then it sometimes works admirably. We cannot agree with writers who recommend ergot in sclerotic diseases, particularly in tabes. It is well known that this substance itself, when administered in large doses or for a long-continued period, can produce sclerosis of the cord. Spitzka[2] has seen a tabetic patient, advanced in the disease, who had received the drug for three weeks in such quantities that it was estimated that he had received more than some of the patients in whom Tuczek discovered the development of ergotin tabes. The proof of the existence of congestion and engorgement of the vessels at the onset of tabes has not been furnished ; as a rule, the vessels are found sclerosed and narrowed. Spitzka points out that in the natural progress of tabes the lightning-like pains disappear, usually, about the time the anæsthesia becomes greater. The reason for this is supposed to be the destruction of the nerve-tubes whose previous irritation caused the pains. If, as is claimed, ergotin does produce amelioration of the lightning-like pains, it would be a damaging revelation to show that it does so in imitation of the natural process—that is, by increasing the sclerosis.

[1] See Centralblatt für Therapie, i. p. 227.

[2] American System of Medicine, vol. v. p. 901.

Ergot in diabetes mellitus.—It is not within the scope of this paper to dwell fully upon the pathology of glycosuria. This subject received much consideration at the last International Medical Congress,[1] where the debate concentrated the wide experience of such authorities as Pavy, Seegen, Dujardin-Beaumetz, de Renzi and Enrico Reale. An excellent summary of our present knowledge of the pathological anatomy of this disease has been furnished by Dr. Robert Saundby.[2] From the point of view of rational therapeutics it would be an important gain to have the various forms of diabetes classified more in accordance with their apparent etiological basis. We might thus distinguish cerebral, spinal, ganglionic, neurotic, salivary, pancreatic, duodenal, hepatic, and hæmatogenous diabetes mellitus. The hepatic form might be eliminated, because it seems probable that the liver is in no case either primarily affected or the primary cause of the disease. Section or paralysis of the vasomotor conducting paths from the centre to the liver is always followed by glycosuria. A number of hepatic nerve-fibres leave the cord high up and enter the sympathetic paths to the liver, and the disease has been observed to follow destruction of the upper cervical ganglion (Pavy), of the lower cervical and of the first thoracic ganglion[3] of the abdominal ganglia (Klebs and Maunk), and also of the splanchnic nerve (Hensen and v. Graefe). As a consequence of destruction or paralysis of these structures there results vasomotor paralysis of the hepatic circulation. The expanded vessels engorge the liver with blood, which flows through the organ at low pressure and very slowly. This disturbance in the hepatic circulation causes an abundance of sugar formation in the liver, as the blood-ferment has ample time under these conditions to metamorphose the glycogen. Normally the vasomotor system of the liver is to be looked upon as exercising an inhibitory influence over the transformation of glycogen into sugar. The first four varieties, cerebral (Claude Bernard's puncture of the floor of the fourth ventricle), spinal, neurotic, and ganglionic all produce mellituria by causing the same changes in the liver; *i. e.*, vasomotor paralysis. It was to combat the hepatic engorgement that ergot was recommended in this form of diabetes. There are, however, other forms over which ergot cannot possibly have any kind of controlling influence. Lepine, of Lyons, has produced very plausible evidence that there is a form of diabetes which is due to a deficiency of the diastatic ferment in the blood. The following are his reasons:

1. The blood of a diabetic dog contains this ferment in much less quantity than the blood of a healthy dog.

2. Diastase injected in the dose of one grain into a diabetic dog diminished glycosuria.

3. Diastase injected in the same dose under the skin of a diabetic man diminished glycosuria.

Such a form of the disease as this might be termed hæmatogenous, as it depends upon some change in the composition of the blood. Ergot could, of course, exert no influence on this morbid change.

At the Tenth International Medical Congress Drs. de Renzi and Enrico Reale presented a joint communication on their experiments on diabetes, from which it appears that, experimentally at least, there are pancreatic, duodenal, and salivary forms of diabetes, as extirpation of the pancreas, duodenum, or salivary glands causes this disease. These observers also come to the conclusion that there exists in the organism a ferment occurring in varying amounts in the different organs, which ferment destroys sugar.

It appears that ergot is of no utility in pancreatic, salivary, duodenal, and hæmatogenous (absence from the blood of diastatic ferment) diabetes. We have records of two cases of well-marked diabetes in which ergot did not at all reduce the amount of sugar in the urine or the total quantity excreted; whereas the same cases improved as soon as the ergot was discontinued, and the patients were put upon opium and tinctura ferri chloridi. In both methods of treatment the patients were kept on a diabetic diet.

Addenda to experimental portion of this paper, published in The Medical News, January 31 and February 7, 1891:

1. In studying the effects of ergot on blood-pressure, the drug, as was stated, was allowed to run into the jugular vein diluted with defibrinated blood. We omitted to state that defibrinated blood injected alone had no influence on blood-pressure.

2. A second series of experiments to obtain tracings of uterine contractions with the manometer failed for reasons already stated.

3. Under the head of causes of reduced temperature under ergot we omitted to refer to a possible effect on the glycogenic functions of the liver, which is one of the metabolic processes that raise the temperature of the blood. There are no experimental methods at our command to investigate this question.

4. In estimating the influence of ergot upon the rate of the blood-current, the amount of blood which flowed from a cut artery was first measured under natural conditions and then after the administration of ergot. The amount under ergot was less than the amount before it was injected. But the blood-pressure falls with the vital powers as an animal bleeds, and

[1] Transactions of the Tenth International Medical Congress, Berlin, 1890.

[2] Bradshaw Lecture, London, Aug. 1890.

[3] Eckhard: Beiträge zur Anat. u. Physiol., 1877, viii. p. 79.

the reduction might be due to this and not to ergot. Upon Professor H. N. Martin's advice we then used the Ludwig Stromuhr. It was found after repeated experiments with the Stromuhr (testing the rate of the blood-current under ergot) that the time required to fill the glass globes was a more correct indication of the effect of ergot in slowing the current than calculating the number of millimetres, which differs in both carotids according to their diameter and according to the size of the globes. These varying periods of time were:

	Normally.	Under ergot.
Dog, No. 3, a,	34 seconds.	58 seconds.
" No. 5, b,	35 "	1 minute.
" No. 6, c,	36 "	1.5 minute.

5. Our thanks are due to Professor H. N. Martin for much kind advice.

ORIGINAL LECTURES.

THE LIGATURE OF ARTERIES.[1]

BY STEPHEN SMITH, M.D.,
OF NEW YORK.

THE opening years of the present century were notable in the history of surgery for the extraordinary attention given to the ligature of arteries. The fame of Hunter's successful application of a ligature to the femoral artery for popliteal aneurism had led to renewed inquiry as to the nature of the changes which occur at the seat of ligation and as to the applicability of this operation to other arteries. The field of practice which was now opened was new and most inviting, especially to the younger surgeons. The treatment of aneurisms had hitherto proved most unsatisfactory, but now the way to success had apparently been definitely pointed out, and many were ready to test the value of the new method. Far greater interest, however, was manifested in the operations in England than in France, or other Continental countries. American students were then more frequently educated at the British schools, and the enthusiasm which pervaded the profession at these centres was imparted to the Americans. As a consequence, both British and American surgeons have won the greatest honors in this department of surgical practice.

It is the purpose of this paper to notice more especially the contributions of American surgeons to the improvement and development of the ligation of arteries.

The history of the ligation of arteries for the cure of aneurisms may be divided into three periods. The first period came down to 1785; the second extended from 1785 to 1868; and in the third we are living at present. The recognized operation in the first period is called the old method; that of the second period the new method; that of the third, or present period, the antiseptic method.

The old method dates back to the Greek writers. The principle on which it was based was the obliteration of the tumor by freely opening the sac and promoting suppuration. The feature of the operation which excited most interest among surgeons, and led to improvements, was the method of arresting hæmorrhage. At first the open artery was plugged after the sac was incised—pledgets containing caustic being sometimes employed. Subsequently, the open artery was ligated at the bottom of the sac, and then the sac was filled with lint or other materials, and allowed to suppurate. A still further improvement was the ligation of the vessel, externally but close to the tumor, and the subsequent incision of the sac. Again two ligatures were applied, one above and the other below the tumor. But, whatever method was employed to prevent hæmorrhage, the operation terminated by opening the sac. This operation is described by observers of that period as being most disastrous into results. The suffering of the patients was most severe and the mortality was enormous.

In 1710 an operation was performed which was a radical departure from the old method. For the first time, apparently, the aneurismal tumor was not laid open after ligature of the artery. It was the ligation of the brachial artery by Anel. The patient had an aneurism at the bend of the elbow following venesection, and Anel applied the ligature as near to the tumor as possible. In this respect the operation did not differ from that practised at the time. But he did not touch the aneurism, as was the custom, and was gratified to see the tumor gradually diminish and finally disappear. This operation did not, however, attract attention for three-quarters of a century, and the old method continued to be practised until 1785. It is not difficult to discover, however, in the surgical literature of that time a growing discontent with the operation, and courses of inquiry, which must in the minds of the leading thinkers and observers ripen into radical changes in practice. Pott, in England, and Deschamps, in France, discarded the operation, and preferred amputation of the limb in which the aneurism was located. Cases of the spontaneous cure of aneurism were studied in London, and in one instance John Hunter is reported to have been in consultation in such a case.

The first authentic departure from the old method after Anel's operation occurred in June, 1785, when Desault repeated his operation for a popliteal aneurism, and with success. It has been claimed by French authors that this operation inaugurated the new method, but according to Sabatier the ligature was applied at the upper part of the tumor, and the operator had to separate the nerve from the artery. These facts prove conclusively that the operator applied the ligature close to the tumor, as did Anel. These operations were certainly important steps in advance, and demonstrated all of the possibilities of a century of subsequent improvements. They proved conclusively that the ligature of the artery on the proximal side of the tumor might result in obliteration of the aneurism without opening the sac. Anel's remarks upon his case show that he based the operation upon physiological conclusions, and that it was not an accidental or an empirical procedure. He states that, after ligating the artery, he did not touch the sac, "not doubting but that the blood contained in it would be dissipated, being at liberty to pass on toward the extremity; that the sac, being once empty, would not fill again; that the layers of membrane that formed it would not fail to collapse; and that thus the tumor would disappear, all of which happened as I thought." The de-

[1] The Address in Surgery before the New York State Medical Association, Oct. 23, 1890.

fect in this operation was the application of the ligature so near to the aneurism that it was liable to be placed on a diseased portion of the artery, and hence lead to a fatal result from secondary hæmorrhage. Hunter recognized this fact, as the accident had happened several times to him, as appears from Home's account of his operation, and sought to remedy the defect by applying the ligature to the artery at a point sufficiently distant from the aneurism, on the proximal side, to insure healthy tissue.

Home, who reported the case, remarks as follows:

"The common method of operating in cases of popliteal aneurism having in many instances proved unsuccessful, the operation itself has been condemned by some of our most eminent surgeons. If we consider the cases in which it has been performed, and where the patients have died, we shall probably find that in all of them the artery had been diseased at the part enclosed by the ligature, and had either sloughed off, or had been cut through where it was tied, so that the sides of the artery, though brought together, had not remained a sufficient length of time in that situation to unite by the first intention, and the patients lost their lives from the consequent hæmorrhage."

These statements of Home undoubtedly embody the reflections of Hunter upon the causes of the fatal issue of the old method as modified by Anel, and as recently practised successfully by Desault.

It naturally followed that Hunter should propose to ligate the artery at a higher point, and the reasoning which led to his now famous operation is thus given by Home:

"The femoral and popliteal arteries are portions of the same trunk, presenting themselves on different sides of the thigh, and are readily come at in either situation; but where the artery is passing from the one side to the other, it is more buried in the surrounding parts, and cannot be exposed without some difficulty. In performing the operation for the popliteal aneurism, especially when the tumor is large, the ligature is commonly applied on the artery at that part where it emerges from the muscles. This will be too limited a space should it prove diseased for some way higher up; and, if the artery should afterward give way from any of the causes above mentioned, there will not be a sufficient length of vessel remaining to allow of its being again secured in the ham. To follow the artery up through the insertions of the triceps muscle, to get at a portion of it where it is sound, becomes a very disagreeable part of the operation; and to make an incision on the forepart of the thigh to get at and secure the femoral artery, would be breaking new ground—a thing to be avoided, if possible, in all operations."

In December, 1785, six months after Desault performed his operation, Hunter had the opportunity of putting into practice his preconceived views. The point of ligation was "rather below the middle of the thigh," which must have been about the entrance of the artery into Hunter's canal. Evidently he was disposed to depart "as little as possible" from the old method. He applied a double ligature and tied both portions, but so slightly as only to compress the sides of the artery together. He then applied a second double ligature, lower on the artery, and tied it in the same manner as at first. It is an interesting fact that, in this operation, he included both the artery and vein in the ligatures.

Hunter, it was stated, used four ligatures, and merely tightened them so as to stop the circulation. Home states that "the reason for passing four ligatures was to compress such a length of artery as might make up for the want of tightness, as he chose to avoid great pressure on the vessel at any one part." This practice was in accordance with the prevailing opinion of that period, that arteries were closed by union of the opposed surfaces. The doctrine had come down from Ambrose Paré, and in the use of the ligature this object was especially sought. In various ways the ligature was modified to accomplish that purpose, but for the most part the flat ligature was preferred.

The lessons which Hunter drew from his operation were: (1) that a number of ligatures is not useful, and that one is sufficient; (2) that the artery should not be disturbed further than is necessary to secure the passage of the ligature; (3) that it is not desirable to heal the wound by first intention, but, rather, to allow the cut surface to inflame and suppurate, in order to have it in one's power to reach the artery more readily.

Hunter operated a second time soon after, and applied a single large ligature to both the artery and the vein. He left the wound open to heal by granulation, but his patient died, on the twenty-sixth day, from suppuration and hæmorrhage, due, as he believed, to the open state of the wound. When the hæmorrhage occurred he ligated the artery at a higher point, but without avail. In the third case, he applied a single ligature, and only to the artery; he also closed the wound to secure union by first intention. This case made a good recovery, as did two succeeding cases operated on in a similar manner.

A review of the surgical literature of that period makes it very evident that Hunter's operation was only one step, and by no means a very long one, in the steady advance of improvements in the treatment of aneurism by operative methods. Anel proved that aneurism might be cured by the simple ligation of the artery on its proximal side, without incision of the sac, and thus incurring the dangers of subsequent suppuration. The fault in his operation is, that he adhered to the old method of applying the ligature as near as possible to the tumor, and thus was liable to place it upon a part of the artery partaking of the disease which caused the aneurism, the result of which might be secondary hæmorrhage. Hunter remedied this defect by applying the ligature a little further from the aneurism, and at as short a distance as possible, in order to secure a healthy portion of the artery. He employed the ligature as was practised at that time, with a view of simply compressing the sides of the artery, and securing union by adhesive inflammation. On repeating the operation, he gradually improved in the use of the ligature and finally employed one where he had used four.

It is reported by Home that Hunter's operation was frequently repeated in the London hospitals, but with many modifications. For the most part, the departures from his method were rather toward Anel's operation. Birch used two ligatures, but left the second one loose. Earle applied the ligature above the aneurism, but in the popliteal space. Pott operated in a similar manner. Home, however, followed strictly the method of Hunter, and with marked success. At the close of the century, the merits of the new method were fully recognized, and

pioneers began to venture into new and unexplored regions.

Another step in advance of the old method, and scarcely less important than that made by Hunter, was suggested by Brasdor. This consisted in applying the ligature upon the distal side of the aneurism, instead of the proximal, and leaving the aneurism to consolidate by means of the blood entering the sac. This operation differed slightly, if at all, in its practical effects upon the physiological changes in the aneurism, from the operation of Hunter. It was a most important suggestion, for it enabled the operator to treat successfully a class of cases in which it was impossible to ligate the main trunk on the cardiac side of the tumor. Desault advocated the operation, but Deschamps and Astley Cooper were the first to put the method in practice, the former for a femoral aneurism and the latter for an iliac aneurism. Both failed disastrously. It was not again practised until 1825, when Wardrop applied a ligature to the carotid on the distal side of the tumor, and his patient recovered. Since that date it has become a favorite operation in cases which do not admit of Hunter's method. Mott was the first to operate by this method in this country, his cases being aneurisms of the innominata, for which he ligated the carotid. The first patient was cured, the second died from hæmorrhage. Mott heartily approved the operation, and the success which has since attended it proves his practical sagacity.

The operation of Hunter renewed the discussion, which had long been in progress, relating to the action of the ligature on the artery. As has been stated, the prevailing opinion at the close of the century was that the ligature should simply compress the sides of the artery together, when union takes place by adhesion of the opposed surfaces. This view led to various devices to promote the proper contact of the inner surfaces of the artery. A favorite ligature was made of a number of threads, which was called the "flat ligature." For the same purpose, more than one ligature was employed. Again, compresses were placed under the ligature and on the artery.

In 1803–4, a very original and exact series of experiments was performed by Dr. J. F. D. Jones, then a recent graduate of the Edinburgh school, for the purpose of determining the exact changes which a ligature effected on an artery. The most important conclusions from these experiments were: (1) that when the ligature is properly applied, it cuts through the internal and middle coats, and brings the wounded surfaces together; (2) that an inflammation is excited of the internal and middle coats which gives rise to an effusion of lymph, by which the wounded surfaces are united and the canal rendered impervious; (3) that an ulceration of the external coat follows, and thus there is produced a complete obliteration of the canal of the artery.

Though these propositions were combated by many authors, they greatly influenced leading surgeons, and finally came to be the prevailing belief, and continued to govern practice down to the antiseptic period.

The second notable incident of that discussion is the paper of Mr. Lawrence, in 1814, advocating the use of a very fine silk ligature, and cutting off both ends of the ligature. Hitherto, vegetable matter had been used, as, for example, hemp. It was now proposed to use animal matter, and silk was selected in the belief that it would soften and dissolve in such a manner as to be carried away by interstitial absorption. Mr. Lawrence proposed to apply a small ligature, close the wound, secure union by the first intention, and leave the ligature to be absorbed. He selected a fine quality of dentist's silk, and employed in each ligature the smallest amount possible to tie the artery. He says: "The method I have adopted consists in tying the vessels with fine silk ligatures and cutting off the ends as close to the knot as is consistent with its security. Thus, the foreign matter is reduced to the insignificant quantity which forms the noose actually surrounding the vessel, and the knot by which that noose is fastened. Of the silk, which I commonly employ, a portion sufficient to tie a large artery, when the ends are thus cut off, weighs between $\frac{1}{250}$ and $\frac{1}{80}$ of a grain; a similar portion of the thickest kind I have tried weighs $\frac{1}{20}$ of a grain, and of the slenderest $\frac{1}{1000}$." Mr. Lawrence states that "during the last ten months I have employed this method of securing the arteries in ten or eleven cases of amputation, in six operations on the breast, and in the removal of two testicles." With but one exception, the cases all did well, the wounds healed readily, and nothing was seen of the ligatures. Silk was now more frequently employed, but it was soon discovered that the ligature did not dissolve, and hence remained to cause future irritation and suppuration. While silk came to be preferred as a ligature, the method of Lawrence in closing the wound was not approved.

It is quite remarkable that Mr. Lawrence's suggestion caused no change in practice. He fairly anticipated the antiseptic or aseptic period, and the success of his method commended it to the favorable notice of every operator. It was, however, rejected or unheeded, and the method of Jones continued to be the favorite operation half a century longer, viz., the single ligature with one end depending from the wound. Mott rejected Lawrence's method with the remark: "The absurdity of it consists in this, that the wound will be healed by the first intention, and the ligatures, by being left to remain as an extraneous substance, will, in the course of five or six weeks, manifest their injurious action by producing suppuration." This practice, he thought, was the other extreme of Scarpa's, who kept the wound constantly open.

Dr. Physick, of Philadelphia, seems to have been the first to recommend strictly animal structures for ligatures. He selected deer-skin, chamois, and catgut, and Dr. Dorsey employed them frequently.

A more remarkable contribution to the improvement of the ligature was made by Dr. Jameson, of Baltimore. He made a large number of experiments with various ligatures, and his conclusions completely anticipated the antiseptic period in everything except the use of positive antiseptic materials. He used a very soft deer-skin, cut into fine strips, which had the form of the old flat ligature. This ligature he applied with only sufficient firmness to press the sides of the artery together, and was careful not to divide the coats of the vessel. His purpose was to disturb the artery as little as possible, and especially not to injure the vasa vasorum, as he

relied upon the organization of lymph about the ligature to close the vessel permanently. He alleged, as a result of his experiments and observations upon animals, that when an animal ligature is applied, a capsule will surround the ligature so as not to disturb capillary vessels, or the vessel will be surrounded by an abundance of lymph, the ligature will be dissolved, and will not require removal. It is stated of Dr. Jameson's practice that for many years he used the deer-skin ligature in amputations—the ligature of the carotid, iliac, femoral, radial, and other arteries—and never had secondary hæmorrhage. In what exact terms he describes the appearance of an artery some time after it has been ligated with a catgut ligature antiseptically, will appear when I speak of the present period.

The difficulty of passing the ligature around the artery, owing to the want of a suitable instrument, was a great embarrassment to the early surgeons. Some operators used a probe with an eye, others selected curved needles. At length instruments began to be devised, and many of them are now objects of curiosity as specimens of human ingenuity. The first really useful instrument was devised by Drs. Physick and Hewson, of Philadelphia. This needle was used by Mott in ligating the innominata, and highly commended by him. He subsequently improved it by attaching the needle to the handle by a screw, by means of which the handle could be removed when the needle was under the artery. This he called the "American needle," and it is still the best in use.

Among the visitors at the public hospitals of London in 1784–1786 was Dr. Wright Post, of New York. He was a recent graduate of medicine, and had been a pupil of Dr. Richard Bailey, one of the leading surgeons of New York. Dr. Post was a man of acute observation, and had an ambition to excel in surgery. There is little doubt that he was present at St. George's Hospital on that memorable day in 1785 when Hunter tied the femoral, and that he drew from it the inspiration which led to his future achievements in this field of practice. On his return he became a lecturer on surgery in the Columbia Medical College. Mott, who was his pupil, states that, long before Sir Astley Cooper operated on the carotid, he heard Post in his lectures assert his belief that not only one carotid might be tied for aneurism, but that both might be interrupted by ligatures, on the same person, and the patient recover.

About the year 1794–1795 Dr. Post applied a ligature to the femoral artery on the plan of Hunter. This case has never been tabulated, and is alluded to incidentally in his report of the case of inguinal aneurism for which he ligated the external iliac, and by Mott, in his biography of Post. The patient had a femoral aneurism, caused by a wound of the artery fifteen years previously. The precise location of the aneurism is not given, nor the point at which the ligature was applied. He states that the patient recovered from the operation in about the ordinary time, and the tumor gradually diminished until it was reduced to a size not exceeding one inch in diameter. But the remarkable fact connected with it, to which he makes special allusion, was the continuance of the pulsation in the tumor. This he attributed to the increase in the size of the anastomosing vessels, due to the long continuance of the aneurism. The circulation in the aneurism did not interfere with the gradual diminution of the tumor. He says: "The limb, which had been rendered wholly useless to him by the immense size of the tumor and the extreme pain which he had suffered in the later stages of it, recovered its powers in a reasonable time, and he has continued to use it in all the ordinary exercises of walking, riding, etc , with as much freedom and as little inconvenience as before the disease took place."

Mott, alluding to this case, states that the man was living thirty years after the operation. This was the nineteenth recorded ligation of the femoral after Hunter's first operation, and the first operation by the new method in this country. It was also the first instance of a discussion of a return of the pulsation in the aneurism after ligature of the artery, with a correct appreciation of the cause of such pulsation.

On January 9, 1813, Dr. Post ligated the common carotid artery for aneurism successfully. This was the fifth operation on the common carotid, and the third successful case. It was the first operation in this country for aneurism. In this case Post passed two ligatures around the artery, about three-quarters of an inch apart, and divided the artery between them. He also passed the needle through the artery, as recommended by the younger Cline, to prevent the ligature from slipping from the end of the artery.

The practice of applying two ligatures, and dividing the artery between them, dates back to Fabricius, of the seventeenth century, but was warmly advocated by Abernethy, and practised by him. The danger of hæmorrhage from the slipping of the ligature from the end of the artery was, at that time, regarded as very great, and to prevent it a needle was placed on the ligature after it was tied, and the thread was passed through the artery close to the ligature and tied with the knot already made. This expedient was first recommended by Dionis, and not by Cline, as stated by Post.

The patient recovered from the operation, but the aneurism opened after eight months, and a large hæmorrhage occurred. This hæmorrhage was repeated about six weeks later, when the entire contents of the sac appeared to be discharged, and healthy granulations sprang up. The recovery was now rapid and complete.

One year later, viz., January 4, 1814, Dr. Post applied a ligature to the external iliac for inguinal aneurism. The method of operating was interesting, for at that period no very definite rules had been fixed. He describes his operation as follows:

"An incision was made through the integuments with some degree of obliquity, between three and four inches long, beginning a small distance above the tumor, and extending upward externally to a middle line between the umbilicus and superior anterior spinous process of the ilium. The abdominal muscles were then cut through, until the peritoneum at the lower part of the wound was fully exposed. I next endeavored to detach this membrane from the crural arch so as to get at the artery without opening into the cavity of the peritoneum; but in this attempt I was frustrated. The strength and thickness of the peritoneum at this part were considerably greater than natural, and its adhesion to the ligament so firm that the separation, which is ordinarily so easily

effected, was found in this case altogether impracticable. This condition of the parts may reasonably be ascribed to the pressure of the aneurismal tumor. To arrive at the artery, therefore, under these circumstances, it was necessary to cut through the peritoneum, and thus expose the patient to the additional hazard of inflammation of this membrane, to which it is generally supposed to be very liable when an opening is made into the common cavity of the abdomen. But to accomplish my object there was no alternative. I did not hesitate, therefore, in proceeding with the operation in this manner."

He had great difficulty in his efforts to expose the artery and open the sheath, and to avoid enlarging the wound of the peritoneum he passed the needle, armed with the ligature, through the sheath, on the under side, from within outward. He employed a needle suggested by Dr. Physick, and which was used by Dr. Dorsey in his operation on the same artery. The patient made a good recovery.

The noticeable features in this case are:

1. The incision of the peritoneum and free exposure of the abdominal cavity. No harm seems to have followed this treatment of the peritoneum. There are two suggestions which may, perhaps, explain the freedom from peritonitis in this case. The first is that Dr. Post is always spoken of as a man of great fastidiousness as regards his personal appearance and dress; this led to extreme neatness and cleanliness of his hands and of his instruments, and of the details of his dressing of wounds. The second is the fact that, at the close of the first day, the patient was required to take an active cathartic, composed of infusion of senna, manna, and cream of tartar, which produced, according to the record, "frequent and copious dejections." This thorough action of the bowels would tend powerfully, according to present teachings, to remove the accumulating causes of acute peritonitis after incision of that membrane.

2. Pulsation in the tumor returned on the 24th day, and was continuing at the time of the report, three months after the operation, but without any change in the tumor. He raised the question as to the liability of the return of the aneurism, but decided that it would not return, basing his conclusion on his experience in the case of the femoral aneurism previously described.

On the 28th of November, 1816, Post again ligated the common carotid artery for a pulsating tumor of the neck, about which there was a difference of opinion as to its nature. The patient recovered from the operation, but died two years subsequently. The autopsy disclosed a tumor, with no indications of the previous existence of an aneurism. It was this case that Mott often alluded to in his lectures illustrating the difficulties of correctly diagnosing an aneurism from an abscess, or a tumor situated upon an artery. At the consultation of Post, Stevens, and Mott, the question raised was as to its being an aneurism, an abscess, or a solid tumor. Post regarded it as an aneurism, Stevens as an abscess, and Mott as a solid tumor. Stevens proposed to Post the propriety of exploring it by puncture with a lancet. Post responded by handing Stevens a lancet. Stevens declined, and proposed that Mott should explore. He also declined, and Post was allowed to exercise his discretion.

On the 8th of September, 1817, Dr. Post ligated the left subclavian, in its third part, for aneurism of the brachial artery. He employed the needles invented by Drs. Parrish, Hartshorne, and Hewson, of Philadelphia. The patient made a good recovery, though the aneurism ruptured and discharged its contents during convalescence. This was the eighth recorded operation on the subclavian artery, and the third which recovered. It was also the first operation upon that artery in this country by the new method.

It thus appears that at this early period in the history of the new method, Dr. Wright Post applied the ligature to four different arteries successfully, and twice to the carotid. And these were by no means simple and uncomplicated cases. Each case presented more than ordinary difficulties, and one—the external iliac—involved complications which, at that period especially almost uniformly proved fatal. A success like this was not recorded at that time, and has not been surpassed even in these antiseptic days. As already remarked, we can only account for his great and uniform success by the extreme care of the operator in protecting the wounds from the admission of the common forms of septic matter which adhere to the hands, instruments, and dressings.

Of the five operations, Dr. Post was anticipated in this country in but one instance, viz., ligation of the external iliac. Dr. Dorsey, of Philadelphia, operated in 1811, about three years before Dr. Post.

Great as was the merit of Dr. Post as a successful pioneer in this field, he was destined to be surpassed by his student and colleague in the New York hospital, Dr. Valentine Mott. Mott had not only imbibed a strong predilection for surgery by attendance upon Dr. Post's lectures, but he became also a pupil of Astley Cooper at a period when that surgeon was the leading operator in London. Cooper was the first surgeon who applied a ligature to the carotid artery for aneurism. This operation was performed in 1805, but was unsuccessful. In 1808 he repeated the operation successfully, and Mott was present at the operation. He always spoke enthusiastically of this occasion, and evidently was greatly stimulated by it to pursue the study of aneurisms and their treatment.

A few months later, Cooper attempted to ligate the left subclavian between the scaleni muscles, but failed. Mott was present at this operation also, and was deeply impressed with the difficulties of the procedure, and Cooper's skill and candor. Speaking of the operation, Mott states that "after working indefatigably with all his eminent skill and superlative tact for an hour and a half, he (Cooper) abandoned the operation."

On returning home, Mott was well equipped for the great career which was opened before him. His personal qualifications were of a high order. He was, first of all, a laborious student—not so much of books, for few were then to be had, but a student of nature. He performed no operation during his long life that he did not make the subject of careful study and preparation, if the circumstances permitted. Again, he was a very bold operator, and well adapted to be a pioneer. But this boldness was guarded and tempered by a conscientious conservatism. Moreover, his preparation for every operation, and his careful foresight of all possible emer-

gencies, rendered his fearlessness in undertaking operations entirely safe. Finally, he was a remarkably clean person, being even more fastidious in his dress than Dr. Post. It was a remark of one of his contemporaries that, on Dr. Mott's return from Europe, he was so extraordinarily neat in his person that he attracted the attention of every one when he appeared on the streets. This neatness extended to the care of his instruments, which he required should be thoroughly cleaned, not only after each operation, but also just before an operation. How much of his success in the recovery of his patients was due to this practical asepticism we now can only conjecture, but that it had a most potent influence there can be no doubt.

Mott's pioneer work appears in the ligation of the arteria innominata and the common iliac arteries. The application of a ligature to the innominate artery was not only Mott's greatest achievement in operative surgery, but was the most brilliant operation ever undertaken by any surgeon in the history of operative surgery to that date. Nor has it been excelled in this particular branch, if we consider all the circumstances attending the operation. It was by no means suddenly conceived and executed, but was the culmination of years of preparation. He states that "since the publication of Allan Burn's invaluable work on the surgical anatomy of the head and neck, I have been in the habit of showing, in my surgical lectures, the practicability of securing in a ligature the arteria innominata; and I have had no hesitation in remarking that it was my opinion, that this artery might be taken up for some condition of aneurisms; and that a surgeon with a steady hand and a correct knowledge of the parts would be justified in doing it." The proper case presented itself March 1, 1818, and he says, "I could not for a moment hesitate in recommending and performing the operation." Dr. Wright Post, whom he had so often aided, now became his assistant and guide. Though the operation finally failed after giving the most encouraging prospect of success, Mott was not disheartened, but regarded the practicability and propriety as satisfactorily established by this case, and predicted that it would prove to be "the bearer of a message to surgery containing new and important results."

The ligation of the primitive iliac for aneurism was performed March 15, 1827. Gibson had previously applied a ligature to this artery in a case of gunshot wound during a riot, but he simply seized a bleeding vessel with his finger, and applied two ligatures, and found at the autopsy that one was on the common iliac. Mott's operation was executed with his usual care and caution, though it was rendered very difficult owing to the size of the tumor and the adhesions of the peritoneum. The patient made a good recovery, and was living thirty years after. In the practice of other surgeons the operation has proved very fatal. During the twenty-five years following Mott's operation, there were eighteen ligations of the common iliac with fourteen deaths, or upward of seventy-seven per cent.

Mott's experience in the ligation of arteries was very great, and his success was remarkable. For example, he ligated the subclavian in its third part six times, all the cases successful; the common carotid thirty-two times, with five failures; the external iliac six times—two died, one from drunkenness, one from secondary hæmorrhage; the femoral fifty-three times, failures not known. He had but one case of mortification of the extremity, a success which Dr. Blackman attributed to Mott's great attention to details. Fruitful as was Mott's career in great surgical deeds, the application of a ligature to the arteria innominata gave to him his most enduring reputation. He was accustomed to speak of the exsection of the entire clavicle as his "Waterloo operation," but the profession has accorded the highest distinction to the former operation.

Scarcely less remarkable as a triumph of bold and daring surgery was Dr. Kearney Rodgers's ligation of the left subclavian artery within the scaleni muscles, in 1845. Indeed, Mott, who was one of the consultants, opposed the operation at the time and afterward. He admitted that it might possibly "be tied by a careful and well-informed surgeon," but he "considered that it was improper to do so." But Rodgers had been led, as he states, "to investigate the subject with great care, and accordingly gave it my most sedulous attention." He adds, "I had always considered it as a perfectly justifiable operation, and one that a careful surgeon conversant with anatomy could accomplish, if the tumor was of moderate size." The consulting surgeons threw the entire responsibility upon him, and thus rendered the undertaking doubly important to the operator. He was about to attempt an operation which not only such veterans as Mott and Stevens declined positively to sanction, but which leading foreign authorities decided was not possible. Rodgers had before him, as he states, the utterance of Colles, the eminent Irish surgeon who first tied the right subclavian in the first part of its course. His conclusion was stated as follows:

"This operation, difficult on the right, must be deemed impracticable on the left subclavian. For the great depth from the surface at which this vessel is placed, the direct course which it runs in ascending to the top of the pleura, the sudden descent which it makes from this to sink under the protection of the clavicle, and the danger of including in the same ligature the eighth pair of nerves, the internal jugular vein, or the carotid, which all run close to, and nearly parallel with this artery—all these constitute such a combination of difficulties as must deter the most enterprising surgeon from undertaking this operation on the left side."

But Rodgers was a most skilful operator, of great courage and reserved mental force. He assumed the weighty responsibility which his colleagues imposed upon him, and true to his convictions of duty proceeded to execute the trust committed to his care. The operation proved in every respect as difficult as had been alleged, but he was thoroughly prepared for every emergency. The ligature was successfully applied, and for several days everything promised success, but on the thirteenth day a hæmorrhage occurred, and on the fifteenth the patient died. The lesson which Rodgers drew from his operation was that the vertebral artery, and, if possible, the thyroid axis, should be secured by ligature. He says in concluding his report of the case, that though the operation was unsuccessful, he trusts that, "from the knowledge thence derived, we shall be enabled to enlarge our sphere of usefulness and be the means of preserving human life." This was the first

and only attempt that has been made to ligate the left subclavian within the scaleni muscles.

During the quarter of a century preceding 1868 scarcely any improvement is noticeable in the ligature of arteries. The operations of Hunter and Brasdor were applied in a great variety of conditions, but no modifications worthy of note were made. There were, however, many notable achievements during that period in the ligation of arteries. Perhaps the most important was what has been regarded as the successful ligation of the innominata by Dr. A. W. Smyth, of New Orleans, in 1864. In this case the carotid was ligated at the same time, and on the fifty-fourth day the vertebral was also ligated. Another interesting incident in this period was the revival of the old method by Syme. In three instances he succeeded in opening the sac and tying the arteries at the base of the tumor. All recovered.

The part borne by American surgeons in the history of the ligature of arteries is most creditable. They have not only been pioneers in enlarging the boundaries of this field of practice, but they have cultivated it with a degree of success unrivalled even by British surgeons. An examination of the statistics of ligation of the principal arteries during the first three-quarters of the present century proves the correctness of this statement. Of sixteen operations upon the innominata, six were performed in this country, or nearly thirty-eight per cent. Of these operations one American surgeon performed the first, and another the only successful operation. Of thirteen ligations of the subclavian in the first part of its surgical course, American surgeons performed five, or more than thirty-eight per cent. Of these cases, all of which were fatal, an American surgeon alone ligated the left subclavian within the scaleni. A comparison of the operations upon all of the principal arteries exhibits an equally honorable record.

On the 31st of December, 1868, an event occurred which was destined to be the final consummation of all improvements in the ligatures of arteries. It was the occasion of the application of ligatures to the carotid artery of a calf, by Mr. Joseph Lister. The ligatures were of two different kinds, and were applied at an interval of about an inch and a half. The cardiac ligature was composed of three strips of peritoneum from the small intestine of an ox, firmly twisted; the distal thread was made of fine catgut. Both had been treated with a saturated watery solution of carbolic acid. The ligatures were cut short except that one end was longer than the other. The wound was completely closed, and it promptly healed. Thirty days after the operation the parts were examined, *post-mortem*, and the appearances carefully noted. There was an entire absence of inflammatory thickening in the vicinity of the vessel. The knots of the distal ligature had disappeared, and the only indications of the end which had been left long was a black speck, here and there, upon a delicate thread of cellular tissue in connection with the vessel. The cardiac ligature was continuous in structure with the cardiac wall. The short ends had disappeared, but the knot was represented by a soft, smooth lump, in the interior of which, and lying close to the wall of the artery, was a small residual portion of the original knot quite distinct from the living tissue around it. Between the proximal ligature and the heart, the formation of a coagulum had been entirely prevented by a large vessel taking origin immediately above the part tied, which had thus borne for a month the full brunt of the cardiac impulse. Clots had formed on the distal side of the ligature. A more minute examination showed that the fleshy material which had been formed at the expense of the ligature was a beautiful example of fibro-plastic structure, the coarse fibres which mainly constituted it being composed of very large elongated cells, often containing several nuclei, and presenting, in their course, branchings and thickenings of various forms. At the situation of the distal ligature the structure of the vessel seemed entirely unaffected, the middle coat was neither thicker nor thinner than the neighboring parts. The vessel, so far from showing any sign of giving away, appeared to have additional strength from the operation. The encircling ring of new tissues, incorporated with the arterial walls, must have had a corroborative effect.

Some time after Mr. Lister's publication, I had an opportunity to test upon the human subject the practical value of this experiment.

"A man, aged forty years, suffering from cancer of the tongue, tonsil, and pharynx, came under treatment at an advanced stage of the disease. He was extremely emaciated, very sallow, could swallow liquids only and with great difficulty, and spoke in a hoarse whisper. He had recently had several slight hæmorrhages from the region of the affected tonsil, and was very apprehensive lest he should bleed to death, and extremely anxious to have measures taken to prevent its recurrence. Extirpation of the whole or any part of the growth so as to benefit him was impossible without endangering his life. The only operation practicable was ligature of the trunk of the vessel whose branches were distributed to that region—viz., the external carotid. This operation he urged to have performed, and accordingly a catgut ligature, carbolized, was applied. The ends were cut short, and the wound closed. Except a slight formation of pus under the skin, due to imperfect drainage, but having no connection with the ligature, the recovery was prompt, and the patient was soon walking about as usual, the cicatrix becoming firm and depressed.

"He had no more hæmorrhages, but died of exhaustion from inanition six weeks after the operation. The autopsy revealed the following condition of the parts involved in the operation: The common carotid, laid open to its bifurcation, was entirely free and without discoverable change. At the bifurcation, and throughout its extent, the internal carotid was normal and without a trace of injury. Near the origin of the external carotid the calibre of that vessel suddenly diminished, and, a little higher, was completely closed. There was no trace of a clot, and no evidence that there had been a clot. But what attracted most attention was a bulbous enlargement of the artery at the point of ligation, which had the appearance of a large ring of new tissue around the artery. This ring was as hard and dense as a cicatrix. An incision was next made through this structure down to the centre, or to a point corresponding with the centre, of the vessel. The calibre of the vessel was completely obliterated by the firm union of the opposing surfaces. Above this point was a well-formed clot extending to the origin of the superior thyroid. On dissecting a ring of new tissue it was found to be well organized,

and at two points was discovered a fine black substance, one portion being an eighth of an inch long, having a direction transverse to the long axis of the artery. These threads were the only remains of the ligature traceable."

Looking at the specimen as a whole, it was apparent that the results of the application of the ligature in this case had been: 1. The immediate closure of the artery by pressure. 2. No injury to the internal and middle coats. 3. The permanent closure of the artery by the union of the opposing surfaces. 4. The strengthening of the artery, immeasurably, by the formation of an immense ligature of living tissue. 5. The possibility of ligating an artery close to its origin, with only the result of strengthening the vessel at that point.

Commenting upon his experiment, Mr. Lister remarked:

"It appears that by applying a ligature of animal tissue antiseptically upon the artery, whether tightly or gently, we virtually surround it with a ring of living tissue, and strengthen the vessel where we obstruct it. . . . The surgeon may now tie an arterial trunk in its continuity close to a large branch, secure alike against secondary hæmorrhage and deep-seated suppuration."

To one who has been personally familiar with the painful anxiety with which the earlier surgeons watched their cases, especially at the period of the separation of the ligature, such language seems preposterous. But, fortunately, it is true. We have reached the happy era of surgery, when to ligate an artery means to strengthen it at the point of ligation. We can ask no more. The improvements in this branch of surgical practice have attained—PERFECTION.

MEDICAL PROGRESS.

Parotitis due to the Pneumococcus.—DUPLAY, in *La Semaine Médicale* of January 14, 1891, reports an interesting case of parotitis following an attack of pneumonia in a man forty-seven years old. Succeeding all the symptoms of a well-developed pneumonia, there suddenly ensued an enormous swelling in the region of the left parotid gland, with an œdema of the entire side of the face, and accompanied with severe pain, which was increased by pressure or by movement of the jaws. This was accompanied by a rise of temperature and symptoms of general depression. The diseases in which this condition occurs are numerous. It has been observed to follow many infectious diseases, including typhus and typhoid fevers, cholera, eruptive fevers, dysentery, pyæmia, puerperal fever, and, as in this case, pneumonia. The pneumococcus was first discovered by Pasteur in 1879, and investigated by Friedländer in 1882, and, later, by Talamon, Fränkel, and Netter, and is known as the pneumococcus of Fränkel. It is slightly elongated and encapsulated, and is grouped in the form of a diplococcus. It acquires a great virulence by culture, which, however, disappears in a short time—usually by the end of seven days. This is peculiar, especially if we bear in mind that the defervescence in pneumonia usually occurs about the seventh day. This micrococcus not only invades the lungs, but is found in the mouth of many healthy patients, and is usually entirely inoffensive. It becomes virulent, however, under certain conditions which are not yet understood, and gives rise to disease in whatever part of the body it enters. It may pass through the Eustachian tube, and produce an otitis; or into the sinuses, and give rise to a coryza; or, under certain circumstances, it may even enter the cranial cavity and produce a basal meningitis. The digestive tract is rarely invaded by this microorganism. The prognosis of these cases is generally grave, pyæmia usually causing death. However, under modern antisepsis, it is not so invariably fatal as it formerly was. As regards treatment, the strength of the patient must be sustained, and it is well in some cases to make large incisions early, thus aborting the progress of the disease; while, in other cases, to open the pockets of pus as they are formed, is all that will be necessary.

A Mixture for Dissolving Diphtheritic Membranes.—CALDWELL recommends the following solution for this purpose:

℞.—Papain	. . .	2½ drachms.
Hydronaphthol	. .	2 grains.
Hydrochloric acid	. .	15 drops.
Distilled water	. .	3 ounces.
Glycerin	. . .	2 drachms.—M.

This is to be applied to the affected parts by means of an atomizer every half hour.

Antiseptic and Sedative Treatment of Hæmorrhoids.—In the *Revue de Thérapeutique Médico-Chirurgicale* the following treatment, consisting in the employment of chrysarobin with belladonna and iodoform, is recommended by KASSOBUDSKI as an equally useful application in the treatment of internal and external hæmorrhoids. For the internal hæmorrhoids, he prescribes the following:

℞.—Chrysarobin	. . .	15 grains.
Iodoform	. . .	5 "
Extract of belladonna	.	8 "
Cacao butter	. . .	6 drachms.

Of this are made ten suppositories, and one suppository ought to be inserted into the rectum each day. After five or six hours the pain and the tumor diminish. The treatment may continue for several months without harm.

For external hemorrhoids the author recommends washing them with a solution of corrosive sublimate of the strength of 1 to 1000 or of carbolic acid, 1 to 50. After this the following salve may be applied:

℞.—Iodoform	. . .	5 grains.
Extract of belladonna	.	8 "
Vaseline	. . .	1 ounce.

Treatment of Dysentery.—MINORBI, in *L'Union Médical*, describes a method of treatment which he has followed in twenty-three cases of dysentery. In one case a cure was obtained in a very few days. The treatment consisted in the insertion into the rectum of suppositories made in the following manner:

℞.—Naphthalin Cacao butter	} of each	2½ drachms.

Where there is ulceration or any other condition

which tends to make the use of a suppository painful or dangerous, he has recourse to the following injection:

℞.—Naphthalin . . . 75 grains.
Olive oil . . . . 6 drachms.

At the beginning of an attack, when there is a good deal of tenesmus, the injections should be given every half hour, but ordinarily it is sufficient to repeat them three or four times in the twenty-four hours. The advantage of this method is that it does not cause constipation, which opium is apt to produce.

ROSSBACH employs naphthalin in the following manner in this condition:

℞.—Naphthalin . . . 10 grains.
Boiling water . . . 4 ounces.
Decoction of marshmallow 1 pint.

This is to be used as an injection at the temperature of 100°. In children who suffer from diarrhœa dependent upon the presence of parasites in the lower bowel, the quantity of naphthalin which is employed should not be more than 15 grains in 4 ounces of oil.—*L' Union Médicale*, December 7, 1890.

Treatment of Articular Rheumatism by Mercury.—CALALB, of Bucharest, employs the following method in the treatment of acute articular rheumatism: He applies ointment of mercury around the inflamed joint, and surrounds this with gutta-percha, which is kept in place by bandages of tarlatan. This dressing is left undisturbed for four days, and at the end of that time he asserts that the pain completely disappears, or, at least, is very much ameliorated. The application may then be renewed. Care should, of course, be taken that too much mercury ointment is not used, owing to the danger of ptyalism. In eight cases in which the author has resorted to this method he had the most excellent results, and he states that the patients bear the mercury exceedingly well. It is advisable to let them have a gargle of chlorate of potassium and myrrh to prevent any tenderness of the gums.—*Revue Internationale de Bibliographie Médicale*, January 25, 1891.

Treatment of Erysipelas by Corrosive Sublimate.—CAYET, in a Paris thesis, gives a method of treatment which was employed by Talamon in the treatment of the pustules of smallpox and which he has used for the relief of erysipelas. The following solution is applied to the affected parts by means of an atomizer:

℞.—Corrosive sublimate, Tartaric or citric acid } of each 15 grains.
Alcohol . . . . . 1½ drachms.
Sulphuric ether, enough to make 3 ounces.

This solution should not be sprayed into the nostrils and the eyes must be protected. The atomizations are to be repeated two or three times a day, and Cayet asserts that the cutaneous inflammation passes away in four days under this treatment.—*Revue Internationale de Bibliographie Médicale*, January 25, 1891.

The Absorption of Medicaments from Ointments.—Much discussion has arisen as to the rapidity of the absorption of drugs through the skin and as to the best vehicle for bringing them in contact with the body. Lanolin has been highly praised, and vaseline has been thought to be a non-absorbable substance which should not be employed. On the other hand, LUFF has reached the conclusion that the best ointment for the promotion of absorption is vaseline. He employed iodide of potassium, carbolic acid, and resorcin mixed with vaseline, and with lard or lanolin, and examined the urine of the patients to determine how rapidly the drugs were absorbed and eliminated. The absorption of iodide of potassium, according to this series of tests, is as follows: When mixed with vaseline, it appears in the urine in one hour; when mixed with lard, in nine hours, and when mixed with lanolin, not at all. Carbolic acid, when mixed with vaseline, appears in the urine in two and a half hours; when mixed with lard, in five hours, and when mixed with lanolin does not appear at all. In the case of resorcin and vaseline, the drug was recovered from the urine in ten hours; when mixed with lard, in fifteen hours, and when mixed with lanolin, not at all. Further tests also showed that drugs mixed with lanolin did not appear in the urine even after twenty-four hours.—*Revue Internationale de Bibliographie Médicale*, January 25, 1891.

Treatment of Malignant Pustule.—In the treatment of malignant pustule, CASSON has employed with success subcutaneous injections of bichloride of mercury. In one case there were four pustules, and into each of these he injected strong solutions of corrosive sublimate. The pain which followed the injection disappeared after the first use of the drug. At the same time that these injections were employed the surface of the pustule was dressed with lint soaked in a strong solution of the corrosive sublimate.—*Revue Internationale de Bibliographie Médicale*, January 25, 1891.

The Duration of Pregnancy.—OLIVER concludes, after very careful observation, that the duration of pregnancy in the human female varies as much as it does in the case of many of the lower animals. Issmer, reckoning only cases in which the fœtus was well developed, asserts that the duration ranges from 260 to 304 days. But Oliver believes there must be some error in this statement. If we reckon from the last menstruation, we must be careful to ascertain the exact date of the cessation of this, for it will be remarked that where the duration of the discharge varies little, the woman, when asked, is more likely to give the date of beginning than the date of cessation of the last menstruation, and in this way mistakes may arise in our calculation to the extent of four or more days. The majority of authors are agreed that in reckoning the duration of pregnancy in woman, we ought to fix the probable date of delivery on the 278th day from the cessation of the last menstruation. He is of opinion that the best results will be obtained by ascertaining, first, the date of the cessation of the last menstruation, and then the usual duration of the inter-menstrual period in each given case; the number of inter-menstrual days should then be divided by two, and it will be found that the 260th day from the middle of the inter-menstrual period will most probably be the date of confinement. — *Liverpool Medico-Chirurgical Journal*, January, 1891.

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SATURDAY, MARCH 14, 1891.

THE INFLUENCE OF SWEET OIL ON CHOLELITHIASIS.

The *Medical Record* notices editorially an interesting discussion of the Medical Society of North Carolina upon the influence of sweet oil on the removal of gall-stones. The discussion subsequently appeared in the *North Carolina Medical Journal*. The subject might seem to have been sufficiently studied for some definite opinion to be reached as to the utility of this remedy, and yet, judging from our contemporary's remarks, chaos still prevails—at least in North Carolina. The conclusions arrived at, if, indeed, it may be said that any were reached, are quite at variance with those now generally received in this country and abroad. They are, briefly, that sweet oil relieves gall-stone colic and prevents its recurrence rather by some modifying influence upon the duct and adjacent bowel than by any effect in expelling the stone. Yet it is mentioned that the President of the society described the case of a man who had three attacks of hepatic colic, each of which oil relieved. The gall-bladder at each seizure was much distended with bile and a stone a half-inch in diameter could be distinctly felt in the gall-bladder. Under the influence of oil the gall-bladder expelled the bile but the stone could still be felt within it. As colic could scarcely be caused by a calculus in the gall-bladder, the non-expulsion of this concretion practically had no bearing on the case. Each attack was, in all probability, due to a similar concretion lodged in the common bile-duct, and which was floated into the bowels under the influence of the oil. This fact does not seem to have been grasped either by those who took part in the discussion or by our contemporary, for it appears that this case was narrated to demonstrate that oil relieves colic in some mysterious way without striking at the cause.

There is no question that the usual cause of hepatic colic is the presence of a gall-stone in one of the biliary ducts—hepatic, cystic, or choledochus; and there seems no doubt that, in a very fair proportion of cases, sweet oil does effectually check colic and prevent its recurrence. Abundant testimony now exists as to this, and it has come to be generally accepted that sweet oil acts as a cholagogue, and that when gall-stones are present in the ducts it tends to promote their extrusion. The distinguished therapeutist Germaine Sée recently, in *La Médecine Moderne*, strongly advocates but two remedies for the relief of cholelithiasis, sodium salicylate and olive oil. Clinical experience with the latter causes him to believe that it both promotes the expulsion of gall-stones and relieves the attending pain and jaundice; though he accepts the results of Rosenberg's experiments on dogs, which show that sweet oil decidedly increases the outflow of bile, especially of its more fluid portions, and that this increase is synchronous with the formation of an excess of fatty acids, he is unable to explain these effects.

The only plausible theory yet offered to account for the efficiency of the oil is that advanced by Dr. D. D. Stewart in a contribution to The Medical News (November 23, 1889), and we are somewhat surprised that it has not received wider notice.

Having in mind that oils and fats are decomposed in the duodenum into their fatty acids and glycerin, it occurred to Dr. Stewart that glycerin so formed probably has the same action in the duodenum as in the rectum when used as a laxative enema, withdrawing water and causing hyperæmia and irritation of the afferent nerves, thus leading to energetic reflex contraction of the gall-bladder, and cystic and common bile-duct. Hence concretions therein sufficiently small to be expelled, are rapidly passed into the duodenum. He suggested also that the diffusive power of glycerin might enable it to enter the ductus

communis and even the cystic and hepatic ducts, and perhaps reach the gall-bladder and the liver, producing a similar depletion of the vessels there and reflexly exciting the muscular fibres of these ducts to contraction, thus probably causing an outflow of dilute bile which would assist in expelling the stone. In the two cases in which Dr. Stewart used oil, gall-stones were recovered from the fæces in addition to quantities of soapy concretions. Noting the smooth, apparently eroded appearance of several of the stones, it occurred to him that the warm solutions of soap formed by the decomposition of the oil might exert a solvent action on cholesterin stones and in some instances cause their disintegration in their passage through the intestines. He found that a solution of soft soap had a very solvent effect on a portion of an old cholesterin stone placed in it. He thought that this might, in a measure, account for the failure to find gall-stones where search had been properly made in cases of hepatic colic treated by large doses of oil. It is worthy of note, that Rosenberg states that fatty acids also are capable of dissolving cholesterin.

Should this plausible theory of Dr. Stewart's be confirmed by experiment, the treatment of hepatic colic may be pursued on a more intelligent basis than hitherto. Glycerin might be administered in gelatin capsules in place of oil, the capsule being used to prevent the dilution of the glycerin before it reaches the duodenum. Or should oil be preferred, pancreatin, in capsules, might be simultaneously administered to insure its complete splitting up.

UTERINE RETRO-DISPLACEMENTS.

As is usual with most ailments of the human body, the treatment of retro-displacements of the uterus has undergone many changes; in fact, the evolution is still progressing. The method of replacing the uterus and retaining it in its proper position by the aid of pessaries is one of the oldest and the one to which the profession has most constantly resorted. During the past few years, since surgical procedures have taken such a prominent position in the treatment of diseases of women, many plans based on surgical principles have been devised and put to trial. The mere number of these operations demonstrates how unsatisfactory any and all of them have proven. Had the results of one of them been even approximately satisfactory, the profession would not be slow to adopt it; the fact that none of them has been generally acceptable is but another indication that they do not fulfil all that is promised for them. Rabenau's method of excising a wedge-shaped piece from the anterior lip has been universally abandoned on account of its inefficiency. Both electricity and Thure-Brandt's method of massage have been enthusiastically praised and then forgotten. The Alexander-Adams operation of shortening the round ligaments extra-peritoneally and stitching them to the inguinal canal, has been a matter of active controversy. Although some few surgeons seem to get good results from it and report long series of successful cases, yet it fails to appeal, in ease of performance and permanence of results, to the vast majority of the profession. Edebohl's modification of splitting open the entire length of the inguinal canal seems to promise greater ease and certainty in the performance of the operation itself, but gives no promise of better results. The method proposed by Schuecking of passing a suture through the anterior wall of the uterus *per vaginam*, bringing the end out again into the vagina and then tying the two free ends, has fortunately not been adopted in this country. Schuecking himself reports that a number of his cases had bloody urine after the operation. The results of such procedure must in the long run be disastrous. The method of opening the peritoneal cavity and stitching the fundus to the abdominal walls, contributed by German surgeons, with or without scarifying the surfaces to be united, for a time gave promise of permanent good and was most enthusiastically recommended in this country. It was not long, however, before failures began to be noted, and finally the abdomen had to be reopened for the purpose of undoing the mischief created by the operation. The operation proposed by Wylie, of doubling the round ligaments intra-peritoneally upon themselves and stitching them in that position, as well as the modification of this procedure proposed by Dudley, of denuding the round ligaments and stitching them to a denuded surface on the anterior aspect of the uterus, although extremely ingenious, has not found many advocates.

Kelly, at the meeting of the American Gynecological Society in 1889, proposed the following operation, but abandoned it later for the reason that all his cases had proven failures. The operation consisted in pushing the uterus up *per vaginam* until the fundus could be seen impinging upon the

abdominal wall. A curved needle was then carried through the skin and the fundus of the uterus, together with all the intervening tissues. It was brought out again at a point directly opposite the point of entrance. The two free ends were then tied. Krug (*New York Medical Journal*, January 3, 1891) modifies this procedure by cutting through all the abdominal tissues until he reaches the peritoneum. With the uterus lifted up from the vagina and a finger in the wound, a needle is passed through the whole thickness of the abdominal wall. The point of entrance of the needle is on the skin surface, a quarter of an inch from the incision. With the cutting edge of the needle, guided by the finger in the wound, the uterus is scarified on its anterior surface to the extent of about a square inch. The needle is finally carried through the fundus and brought out through the abdominal walls at a point opposite the point of entrance. Two such sutures are introduced and when the free ends are tied the wound is closed. The advantages claimed for this method are that the peritoneal cavity is not opened and at the same time the denudation is safely performed. The author reports six cases operated upon by this method, but the time is too short to be able to judge as to the permanency of the results.

Krug distinctly says that this operation is only applicable to cases in which the retro-displacement is uncomplicated. This is equally true of all the operations in which the peritoneal cavity is not opened, and just here lies the great fault of all such procedures. It is exceptional that an uncomplicated retro-displacement causes any trouble, and it will be frequently found in cases in which there is no local complication that the trouble is a general one, with a local manifestation of symptoms. If there be really no local complication the uterus can readily be replaced and held in position by a properly-fitting pessary; consequently the foregoing operation, with all its kind, would seem to be superfluous. If, on the other hand, there are adhesions present, all these extra-peritoneal operations must of necessity fail. Experience has shown that the intra-peritoneal methods have accomplished little more. The normal position of the uterus is in the pelvic cavity and all attempts to bring and retain it in the abdominal cavity are irrational and must fail. For uncomplicated cases the risks of a serious operation should not be taken, especially as the pessary is at our command. If the uterine appendages are diseased, the shortening of both the round and broad ligaments incident to the removal of the appendages will in itself correct the malposition. If the only complicating trouble be adhesions of the fundus, without any disease of the tubes or ovaries, the most rational procedures would seem to be outlined in the principles advanced by Wylie and Dudley.

REVIEWS.

A Text-book of Hygiene from an American Standpoint. By G. H. Rohé, M.D. Second edition, thoroughly revised and largely rewritten, with Illustrations and Tables. Philadelphia and London: F. A. Davis, 1891.

Notwithstanding the fact that the Illinois State Board of Health requires practitioners who come within its jurisdiction for the purpose of practising medicine to have attended lectures upon the subject of hygiene, very much less attention is given to this branch than necessity requires; and the fact that the entire subject has been so abused by those who are quacks, or exist on the borderland of quackery, has caused certain members of the profession to regard with distrust those who devote themselves to the study of Preventive Medicine. These objections, however, do not obtain against the book which has been prepared by Dr. Rohé. Not only is the advice which it contains of practical utility but it is so put that "he who runs may read," and profit by it. The article on the "Influence of Cooking upon Food" and that on "Beverages containing Alcohol" are unusually good and fully up to the times. The recommendation is made that American wines should be used in place of the imported wines which are, for various reasons, in many cases greatly adulterated. A very considerable addition to the book is the article upon "Quarantine," by Dr. Walter Wyman, of the United States Marine-Hospital Service, and the contribution of Dr. Albert L. Gihon, of the United States Navy, upon "Naval Hygiene." Very few of the profession appreciate the measures which are taken by the various branches of the government service to protect the inhabitants of the United States from disease, and all articles which can bring this subject to us in a forcible manner are worthy of being carefully considered. The fact that Dr. Rohé's book has passed into a second edition shows that it has been appreciated, and as he has taken pains to make the second edition much more thorough and has added a hundred pages to the volume, those who are interested in hygiene should certainly possess it.

The Daughter: Her Health, Education, and Wedlock. By William M. Capp, M.D., F.A. Philadelphia and London: F. A. Davis, 1890.

Dr. Capp has written a book which will doubtless be found useful by those physicians who think it advisable to place in the hands of patients information concerning the care of themselves or their children. The author, very properly, does not profess to do anything more than to direct the laity in that knowledge which is

so necessary for their welfare. Many of the more delicate subjects such as that of "Training for Married Life," the "Interruption of the Menstrual Function," and the "Relationship between the Sexes" are treated with very considerable skill and in a manner which could not strike anyone as being improper or bald. There is probably no period of a woman's life in which the possibilities for disordering natural functions are greater than they are about the age of puberty, and the absolute ignorance in which most young girls are allowed to exist, even until they attain adult life, is often productive of much misery, both mental and physical. Quite a number of the books which have been written by physicians for popular use have been prepared in such a way that the professional man can read between the lines strong bids for popular favor, or terms are employed which are so deep as to give no information or produce great alarm. These objectionable features will not be found in Dr. Capp's *brochure*, and for this reason it is worthy the confidence of physicians. Certain portions of the book seem to point to the fact that the author has been more alive to the importance of the subject than to the character of the English which he has employed; thus, on page 99, the typographical error which reads "nominal health," has been, by the use of a pen, changed to the words "normal health," the adjective (normal) being, of course, absolutely unnecessary.

A Treatise on the Diseases of Infancy and Childhood. By J. Lewis Smith, M.D. Seventh edition, thoroughly revised. Illustrated. Philadelphia: Lea Brothers & Co., 1890.

To those who are interested in children's diseases the appearance of the seventh edition of Dr. Smith's classical work on this branch of medicine has given much pleasure, because it brings the book fully up to date and renders it even more than before worthy of universal recommendation to both students and practitioners. As the author points out in the preface, he has found it necessary to include for the first time the discussion of a number of diseases which hitherto were not considered by him. Prominent among these are epilepsy, appendicitis, typhlitis and perityphlitis, and an article on intubation, all of which subjects are of great importance and worthy of a place in so complete a text-book. Most of our readers are so well acquainted with Dr. Smith's book in former editions that to do more than direct attention to the seventh revision is unnecessary.

CORRESPONDENCE.

CHICAGO.

The Chicago Policlinic will commence its third semi-annual special course for practitioners March 30th. Among the lecturers are Drs. Fenger, Parkes, Belfield, Etheridge, and Senn.

That too great care cannot be exercised in writing prescriptions was well illustrated in the case of a prominent physician in this city who recently prescribed an overdose of laudanum for a twelve-weeks-old baby, the child dying in a few hours thereafter. It is said that the dose was large enough to kill three ordinary men. The doctor was sued for $5000, but the jury returned a verdict for $500 damages. The case has attracted considerable attention from medical men and pharmacists. The doctor, discovering his mistake, called at the drug-store shortly afterward, and securing the prescription, changed it in order to make it appear that the medicines called for were harmless. This fact was brought out in the evidence given in the case.

The grand jury reported a few days since that, after visiting the Detention Hospital, they had found it, after careful investigation, to be clean and free from vermin. With regard to the Cook County Hospital, they had examined closely every department, particularly the food and the hygienic surroundings, and found them in good condition. The food was well cooked and of wholesome quality. The report states, also, that there are 400 patients at the county hospital, and all well cared for, both officers and attendants being kind and considerate in their treatment. The Asylum contains 1299 men, 425 women, 50 girls, and 45 boys. The building is kept scrupulously clean, and everything possible for the best interests of the patients is done.

RETROVERSION OF THE UTERUS, WITH THE BLADDER ADHERENT TO THE ABDOMINAL WALL.

To the Editor of The Medical News,

Sir: The writer was called in consultation, on January 3, 1889, by Dr. Willoughby, of Buffalo, to see Mrs. McC., forty-one years of age, the mother of five children, the youngest being four years old. The history of the case, as given by Dr. Willoughby, was as follows: About a week before our consultation he was called, and found the patient suffering from headache, loss of appetite, nausea, pain in different parts of the body, insomnia, and difficulty in urinating. During the previous two or three days she had had a sanguinous discharge, although not so much as during her normal periods. She had not menstruated for three months, yet previously to that time her menstrual periods had been regular. Dr. Willoughby concluded that she was pregnant but threatened with a miscarriage, and treated her accordingly. The flow soon stopped, but the patient did not improve, and, upon a more thorough examination, he discovered, in addition to her other troubles, that she was suffering from cystitis and that the fundus of the retroverted uterus was low in the hollow of the sacrum, the os being high behind the pubic arch; also, that she passed but little urine and this with great difficulty. It was found necessary to introduce a rubber male catheter the full length of the instrument to empty the bladder. Thinking that the retroverted uterus pushed the bladder up out of position, thus increasing the difficulty in urinating and also aggravating the cystitis, an effort was made to replace that organ, but without success.

On the next day I was called, and found the patient in bed. Her expression was somewhat anxious, pulse rapid, and temperature 101° F. There were slight abdominal pain and tenderness, and no appetite, and her bowels were constipated. After a thorough examination I fully concurred with Dr. Willoughby in his diagnosis. As

we both thought it advisable to replace the uterus, if possible, the patient was put in the knee-chest position. The vulva and vagina being capacious, I could introduce my hand and grasp the uterus, yet, after persistent effort, was unable to restore the organ to its normal position, or even to move it, and the attempt had to be given up. The patient experienced no ill-effects from the manipulation, but she gradually sank, and died a week later. An autopsy was made by Dr. Willoughby in the presence of Dr. Cronyn and the writer, eighteen hours after the patient's death. Upon making an incision through the abdominal wall, the bladder, which was partly filled with urine, was opened, owing to the fact that its whole anterior wall was closely adherent to the abdominal wall over a nearly circular area six or seven inches in diameter, the upper border of the adhesion being two inches or more above the umbilicus. The adhesions were quite firm, requiring considerable force to separate them. The posterior wall of the bladder was adherent to the uterus for a short distance, and there were two or three points of adhesion between the anterior and posterior walls of that organ. The fundus of the retroverted uterus was situated low in the hollow of the sacrum, and contained a normal fœtus of about three and a half months development. The liver and kidneys were engorged with blood, but the other abdominal organs were healthy.

The point to which I wish to call attention is the firm, extensive, and high adhesions of the bladder to the abdominal wall. In my experience this is an unusual complication, yet it readily explains why the retroverted uterus could not be replaced.

Henry D. Ingraham, M.D.
405 Franklin Street, Buffalo, N. Y.

BELLADONNA FOR STRANGULATED HERNIA.

To the Editor of The Medical News,

Sir: In your issue of January 31st, under "Medical Progress," you quote from an article of Hayem in the *Centralblatt für Chirurgie*, on "The Treatment of Strangulated Hernia by Belladonna and Atropine."

I write to say that since 1865 I have used the Unguentum Belladonnæ, of the U. S. Pharmacopœia, as an inunction to the tumor in cases of strangulated hernia, to facilitate the taxis of the contents of the hernia, and always with success.

I reported the method to several medical societies, and it has been used successfully by some of my former students. Yours truly,

Faneuil D. Weisse, M.D.
New York, February 26, 1891.

DIGESTION, ASSIMILATION, AND OXIDATION.

To the Editor of The Medical News,

Sir: In reply to the criticism by George L. Amerman, in The Medical News of February 28, 1891, for which I am very thankful, permit me to say that one of the sentences to which he refers should read as follows, to make my meaning clear: "This action is effected" *not* "only" *in* an "alkaline solution," *but also* "in an acid medium the percentage-acidity of which has not exceeded ten per cent." This, I think, would also imply action in a neutral medium, possibly developed in the stomach, between the entrance of the salivary fluid from the mouth and the final arrest of the action of the ptyalin by the supra-acid fluid developed within the gastric cavity. I did not lay much stress upon the fermentative action in a neutral medium, because of the little proof that such a reaction is developed and maintained for any considerable length of time in the stomach during the natural processes of digestion.

In the experimental laboratory no one can deny a given result, but evidence obtained in a glass test-tube, or as the result of experimental work upon the lower animals, is not always positive proof of an identical action in the laboratory of the human system.

No one can appreciate more highly than I the evidence obtained in the laboratory, but it will not always correspond with clinical results, because the conditions are not absolutely the same, and in all cases due allowance must be made on both sides if the maximum amount of knowledge is to be attained.

Second: In reference to the terms *non-nutritious* and *nutritious*, as applied to the two classes, CHO and CHNOS compounds. Until the chemist has clearly proved that the chemico-physiological laboratory of the animal economy is capable of taking a simple CHO element, and joining free nitrogen to it, and thus developing within the system a proteid substance, it seems to me proper to retain and follow this classification, as it so closely defines our meaning. The terms "*essential*" and "*accessory*," used by Mr. Huxley, practically mean about the same thing, but they are much less explanatory, and cannot be used with such force, where we apply these laws in the development of diseased conditions as I frequently do in my lectures.

Third: In reference to "the *nitrogenous* envelope surrounding the starch granule." This is unquestionably misleading, and I am glad of the opportunity for correcting the misapprehension. A glance, however, at Table VI., in Lecture III., will show that cellulose is not credited with containing nitrogen, but is rated as a purely CHO element. So that the statement refers to the starch-bearing substance as a whole, and not to purified starch alone. The statement, to obviate all doubt, ought to have read thus: The nitrogenous or proteid part of the starch-bearing substance is digested by the peptic action in the stomach, thus setting free, as it were, the granulose and cellulose, which places the starch granule in a favorable position to imbibe water, to swell up, and in part liberate the granulose from the cellulose.

In regard to the "dogmatic" assertions as to what ferments are, I fully appreciate that, in a measure, what we say about them is largely theoretical, but until more positive information upon the subject is developed, it seems but wise to use these positive statements regarding terms that are in common use, like ptyalin, pepsin, etc. Because Foster says probably other bodies are active constituents, but fails to tell us what they are, why should we confuse our minds with a thousand and one things that may possibly be discovered in due time?

It was in the attempt to base practical medicine upon scientific fact that these lectures were written and delivered in this positive style, and just so soon as the physiological chemist will tell us positively which of the

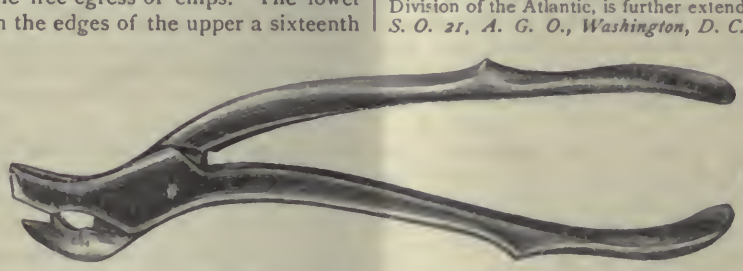
probable ferments is to be the exact starch-transforming substance, and get it so placed or arranged that it will correspond with clinical observations, it will be accepted at once, and I am sure that my fellow-students in this great field will gladly welcome this more definite information. WILLIAM HENRY PORTER, M.D.

NEW INSTRUMENTS.

SPINAL RONGEUR FORCEPS.

BY WILLIAM BARTON HOPKINS, M.D.,
OF PHILADELPHIA.

THE forceps here exhibited are designed to open the spinal canal midway between the spinous and transverse processes. The instrument consists of an upper cutting blade and a lower jaw which acts as a counter, as in the cranial rongeur forceps devised by the writer some years ago. The upper blade has upon its lower margin a double cutting edge an eighth of an inch wide, and is fenestrated with an opening larger at the top than below, to allow of the free egress of chips. The lower blade enters between the edges of the upper a sixteenth



of an inch, and will therefore cleanly incise dense fibrous tissue as well as bone. The lower jaw has a gradual bevel from before backward in order that it may follow in its track without binding; a shoulder at its heel acts as a gauge to indicate the depth it occupies in the bone. The whole instrument has an S-shaped curve that it may be more readily manipulated in the bottom of deep wounds, but care has been taken to preserve the parallel between the axis of the blades and that of the handles. The handles are made with stops to give good purchase in thrusting the instrument forward. The requirements which it has been sought to fulfil with this instrument are, first, to enter the continuity of the spine and divide the laminæ with a single instrument; second, to make a clean narrow bone-wound which can be approximated if desired; third, to lay bare an extensive portion of the cord with rapidity and without risk of injury to it or its membranes. "Experimenting upon the cadaver they are found to enter the spine at any point (cutting always from below upward) with great ease, and with them sixteen laminæ at the dorsal spine were cut away, exposing the cord in eight vertebræ, in seven minutes." Though intended particularly for the spine, its probable adaptability for craniectomy has not been lost sight of.

1904 S. RITTENHOUSE SQUARE.

NEWS ITEMS.

State Board of Medical Examiners and Licensers.—The following resolution is self-explanatory:

Resolved, That the Faculty of the Woman's Medical College of Pennsylvania approves of the present bill of Hon. Frank M. Ritter to establish a State Board of Medical Examiners and Licensers.

CLARA MARSHALL,
Dean.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM MARCH 3 TO MARCH 9, 1891.

By direction of the Secretary of War, leave of absence for two months, on surgeon's certificate of disability, is granted SAMUEL HORTON, *Major and Surgeon.*—Par. 7, *S. O. 49, A. G. O., Washington. D. C.*, February 4, 1891.

By direction of the Secretary of War, HENRY LIPPINCOTT, *Major and Surgeon*, is relieved from duty at Fort Union, New Mexico, to take effect upon the final abandonment of that post, and will then proceed to Fort Adams, Rhode Island, and report in person to the commanding officer of that post, for duty as Post Surgeon, reporting by letter to the commanding general Division of the Atlantic.—Par. 9, *S. O. 46, A. G. O., Washington, D. C.*, February 28, 1891.

By direction of the Secretary of War, the extension of the leave of absence granted WILLIAM B. DAVIS, *Captain and Assistant Surgeon*, in Special Orders No. 22, February 5, 1891, Division of the Atlantic, is further extended one month.—Par. 7, *S. O. 21, A. G. O., Washington, D. C.*, February 28, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 7, 1891.

RUTH, M. L., *Surgeon.*—Granted one month's sick-leave.

EVANS, S. G., *Assistant Surgeon.*—Detached from the Naval Academy, and ordered to the "Monongahela."

PRICE, A. F., *Surgeon.*—Ordered to the U. S. S. "Monongahela."

HARRIS, H. N. T., *Assistant Surgeon.*—Ordered for examination preliminary to promotion.

PICKERELL, GEORGE MCC., *Assistant Surgeon.*—Ordered for examination preliminary to promotion.

AUZAL, ERNEST W., *Passed Assistant Surgeon.*—Ordered to the U. S. S. "Lancaster."

NORTH, JOSEPH H., Jr., *Assistant Surgeon.*—Ordered to the U. S. S. "Lancaster."

GAINES, JAMES H., *Surgeon.*—Ordered before the Retiring Board, March 12th.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE FIVE WEEKS ENDING FEBRUARY 28, 1891.

PETTUS, W. J., *Passed Assistant Surgeon.*—Relieved from special duty as Inspector of Immigrants at the Port of Boston. Ordered to the Marine Hospital, Boston, February 10, 1891.

PERRY, T. B., *Assistant Surgeon.*—Granted leave of absence for thirty days, February 20, 1891.

GOODWIN, H. T., *Assistant Surgeon.*—Relieved from duty at Cincinnati, Ohio. Ordered to Marine Hospital, New York, February 9, 1891.

COFER, S. E., *Assistant Surgeon.*—Detailed for special duty as Inspector of Immigrants, Port of Boston, February 10, 1891.

EAGER, J. M., *Assistant Surgeon.*—Assigned to temporary duty at Cincinnati, Ohio, February 20, 1891.

APPOINTMENT.

EAGER, JOHN M., of Pennsylvania.—Commissioned as Assistant Surgeon by the President, February 16, 1891.

THE MEDICAL NEWS.
A WEEKLY JOURNAL OF MEDICAL SCIENCE.

VOL. LVIII. SATURDAY, MARCH 21, 1891. No. 12.

ORIGINAL ARTICLES.

EXTIRPATION OF THE KIDNEY FOR AN ENORMOUS MYXO-SARCOMA IN A CHILD AGED THREE YEARS AND EIGHT MONTHS.

BY A. V. L. BROKAW, M.D.,
DEMONSTRATOR OF ANATOMY AND OPERATIVE SURGERY IN THE MISSOURI MEDICAL COLLEGE; JUNIOR SURGEON TO ST. JOHN'S HOSPITAL, ETC.

AMONG the rare occurrences in operative surgery is the successful treatment of malignant renal diseases in children. This is shown by the alarming mortality in these cases of 44.9 per cent. due to the operation. The removal of tumors from the kidney in children is an operation of recent date; for it has only been a very short time since surgeons would not attempt operative interference. Fischer[1] tabulated twenty-five such cases, with a mortality of 48 per cent.

Czerney,[2] Schede and Roberts have also contributed to the cases on record. The literature up to date, including a case lately reported by Dohrn (Königsberg), contains twenty-nine cases, bearing the above gloomy figures of 44.9 per cent. mortality.

In view of these facts the case to be presented, and especially the technique of the operation, will contain points of no little interest to the surgeon.

The patient, a boy, aged three years and eight months, came under my observation on November 14, 1890. According to the statements of the parents the child had been complaining since June, 1890, of pain and general discomfort in the right side of the abdomen. Just beneath the free margins of the ribs there appeared a swelling or protrusion which led an irregular physician in charge of the case to the diagnosis of "hypertrophy of the liver." Until two weeks before I was consulted the boy had been engaged in his childish pastimes, playing as usual and giving no evidence of the frightful process which was going on within.

The unmistakable growth, which was now diagnosed, appeared so extensive that I expressed an unfavorable view of operative interference. The tumor filled entirely the lumbar and half of the umbilical region, extending from one and a half inches above the anterior superior spine of the ilium to the free margin of the liver, and on the right side it extended nearly to the middle of the left rectus muscle. It gave a peculiar elastic, almost fluctuating, sensation when palpated; so marked, in fact, that the idea of a cystic growth was entertained by a consultant. The thoracic viscera were normal and nothing of pathological import was revealed by a careful urinary analysis.

In the face of these facts and the tender age of the child the case appeared, to say the least, formidable; so that taking into consideration the general circumstances of the case, and having in mind the great mortality from the operation, I expressed a reluctance to interfere. The father, however, insisted, and accordingly preparations were made for operating on the following day.

Under chloroform I made an incision six inches in length, extending from the margins of the quadratus lumborum muscle to midway between the last rib and the crest of the ilium. A few strokes of the knife brought the tumor to view. It presented a peculiar grayish color, with large venous trunks radiating over its surface. An attempt was made to separate the tumor from the ascending colon without entering the peritoneal cavity; failing in this, however, an opening some five inches in length was torn in the peritoneum. Firm adhesions had formed in almost every direction around the tumor, which made the enucleation of the growth exceedingly difficult. In separating some of the adhesions the capsule of the tumor was ruptured, and with a sudden gush the larger portion of the soft jelly-like mass escaped into the abdomen. Time was an all-important factor, and without stopping to meet this accident I hastily separated the adhesions binding the growth to the hepatic flexure of the colon and liver. I quickly formed a pedicle of the blood-vessels and ureter, and then passed an aneurismal needle between the latter and the vessels, and tied off the kidney with a modified Staffordshire knot. Having completed this, I introduced my hand into the abdomen and removed all the soft material which had escaped into the cavity. The abdominal cavity was thoroughly flushed out with hot water and carefully searched for any remnants of the jelly-like mass.

The rent in the peritoneum was closed with a continuous catgut suture, and the muscles and skin were approximated with silk sutures. A tampon of iodoform gauze was inserted into the deeper part of the wound, and a heavy dressing of bichloride gauze

[1] Deutsche Zeitschrift für Chirurgie, 1889, Bd xxix.
[2] Arch. für Kinderheilk., 1890.

and absorbent cotton was applied and retained in position with a broad bandage.

The shock of the operation was severe and he did not rally completely for four or five hours. The amount of blood lost during the operation was of necessity considerable. Every effort was made to complete the work in the shortest space of time, the entire operation lasting but twenty-three minutes. Fortunately the wound healed by first intention, and the convalescence of the little patient was rapid.

After removal of the gauze tampon on the third day no further provision for drainage was deemed necessary, and a permanent dressing was placed over the wound. This was not removed for two weeks. Three weeks only had passed after the operation, when the boy resumed play indoors, and in less than a month he was in a fair state of health and able to be out of doors. For a period of two months he was free from all symptoms of the original trouble; but within the past ten days he has manifested some peculiar gastric disturbances which I fear indicates a metastasis. As might be supposed, the child's condition before the operation was deplorable. But after the removal of the offending growth he improved in every respect. His appetite was excellent and his strength seemed fully restored.

February 3d. On the night of January 26th the child was taken quite ill and gradually sank, dying February 2d. A metastasis to the liver and stomach had taken place and the tumor almost equalled in size the original growth in the extirpated kidney.

TREATMENT OF PLACENTA PRÆVIA.

By H. H. VINKE,
OF ST CHARLES, MISSOURI.

My excuse for venturing any opinions on a subject upon which so much has already been said by eminent writers is its extreme importance, and though I can offer nothing particularly new, I will attempt to present in a manner as brief as possible the most reliable means at our disposal to treat one of the most dangerous complications of labor. In text-books, as a rule, heroic measures are recommended and immediate interference is advised in cases where the hæmorrhage is at all alarming and the child is supposed to have arrived at a viable age. The object of this communication is to plead for more conservative treatment. The fact that forcible dilatation of the os and the turning of the child are operations in themselves so grave that they may cause the death of both mother and child, and that even then the entire placenta may be expelled before the birth of the child without the loss of any serious amount of blood, would seem to justify this plea. This was forcibly impressed upon me about a year ago, when I was called upon to treat a case of this nature, and though the child was born dead, the mother lost no more blood than during a normal labor.

Unfortunately such favorable terminations are the exception, and, as a rule, in cases of abnormal attachment of the placenta, the skilful, intelligent, and timely assistance of the accoucheur is imperatively demanded. At any period of gestation hæmorrhage may set in, and it is generally the first symptom pointing to an abnormal attachment of the placenta. At times the loss of blood is only small and is spontaneously arrested; at other times the amount is so large and so sudden as to at once place the life of patient in jeopardy. It is usually held that in these cases, particularly in advanced pregnancy, it is best and safest to at once induce labor; but my limited experience would seem to teach that, as a rule, hæmorrhage can be arrested by proper tamponing, and that it is safer to wait for labor to set in spontaneously than to induce it artificially.

When called upon to treat hæmorrhage the result of abnormal attachment of the placenta, I would content myself with arresting the hæmorrhage until labor sets in spontaneously. After labor has set in, I would rupture the membranes as soon as possible. In partial placenta prævia this can be done during the earlier part of labor; in the central form it will probably be impossible until labor is well advanced and the os well dilated. It will be found, however, that at the very beginning of labor the flow of blood is most alarming, and that as the os becomes more and more dilated, the flow of blood becomes more and more diminished. If, however, after the complete dilatation of the os the patient should still continue to lose blood in considerable quantity, and her condition be such as to imperatively demand immediate delivery, turning may now be resorted to, and can, as a rule, be readily accomplished if the attendant will take time and first make out carefully the relation of the child to the mother. Beside insisting upon absolute rest and treating general symptoms as they may arise, it would seem to me that we may safely rely upon the tampon for almost completely arresting all hæmorrhage.

The use of antiseptic material for tamponing renders it unnecessary to replace the tampon every five or six hours, as advised in our text-books. The frequent introduction of a tampon into the vagina is a source of great annoyance to the patient, and has a tendency to render the vagina very sore and painful. Antiseptic tampons can be safely left in place for twenty-four or forty-eight hours.

The vagina cannot be successfully plugged without the use of either Sims's or Simon's speculum. As to

the material to be used for a tampon, I have found corrosive sublimate gauze most useful. It has always seemed to me that failure of plugging is usually owing to the fact that the plug employed is too small, for it is only by packing the gauze well around the os and by filling the whole vagina with the same material that we can expect to control the hæmorrhage successfully.

It will frequently be found that these tampons excite labor pains, thereby assisting in bringing labor to a rapid and successful close. While labor is in progress the plug may be expelled during a pain, and if labor has not sufficiently advanced, it may become necessary to again and again plug the vagina until the finger can reach beyond the margin of the placenta and rupture the membranes. As soon as this is done, labor will rapidly come to a close; the presenting part will insinuate itself in the os, and in doing so will arrest the hæmorrhage.

To reiterate, it would seem that it is not judicious, as a rule, to forcibly induce labor, but that it is safer to wait for labor to set in spontaneously. All antepartum hæmorrhages can be completely controlled, as a rule, by properly plugging the vagina. These antiseptic plugs may be safely left in place for twenty-four or forty-eight hours, and can be renewed whenever required. After labor has set in, the membranes should be punctured as soon as practicable.

CAN HYPERMETROPIA BE HEALTHFULLY OUTGROWN?[1]

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IN the study of refraction and its anomalies it might be claimed that little advance has been made, in spite of the immense amount of work that has been done in this direction, since the era inaugurated by the treatise of Donders. That treatise marks a stage which some of the ophthalmologists of to-day have not yet attained; and while progress, real and considerable, has been achieved at many points, there are some in the profession who seem to close their eyes to this, and persist in holding views no longer sustained by the facts. One of the views thus adhered to is that of the general prevalence of emmetropia—an assumption that has its comfortable side, and its long list of authoritative upholders, yet is surely in conflict with the experience of every careful student. We have outlived Jaeger's teaching that infants are born myopic; and have quite generally accepted the showing of all later investigators that infants are almost without exception hypermetropic. Yet, the investigations which show hypermetropia in the majority of school children have met less acceptance, and studies which even *define* emmetropia as being "normal vision," are offered as sufficient to prove the contrary, while the known prevalence of hypermetropia after loss of the accommodation is explained by a theory of "*hypermetropia acquisita*," backed by the great name of Donders.

Much as we have received from that master, which seems destined to remain an enduring monument of his labor and insight, there is danger that admiration may go much too far in upholding hypotheses which he framed to fill the wonderfully few gaps in his knowledge of this difficult subject. Surely his pupils have ill learned the lessons which he taught, if they insist upon the points which he himself held only tentatively, and try to maintain his unsupported dicta in the face of adverse evidence. It is as a most admiring follower of Donders that I wish to question some of the views which to-day pass current largely upon the authority of his name, for I believe them to be erroneous, and wish that his sanction of them should be forgotten. In a previous paper[1] I endeavored to show that he did not hold the view generally adduced from his much misused paragraph as to "tone of accommodation," which undermines his formal definition of emmetropia; and in the present instance I would call attention to another misunderstood passage of his treatise—that on the frequency of the occurrence of myopia (p. 341). He here gives a diagram, based principally on his case-books, to indicate the relative frequency of the various degrees of refraction error in the Dutch population—a diagram which might be understood to indicate that emmetropia is about as common as the lowest grades of myopia or hypermetropia, were it not expressly stated that the lines representing these are only one-tenth of their proper length. In fact, then, he distinctly states that emmetropia is found in less than 2.5 per cent. of the population, although he had made outside observations in order to correct the possibly erroneous indications obtained from eye cases only. Myopia of $\frac{1}{96}$, or less, he reckons as occurring in 37.5 per cent. of the population, the corresponding grade of hypermetropia in 45 per cent.; and it is only by counting these as practically emmetropic that 85 per cent. of emmetropia is obtained. Donders is far from teaching, therefore, that emmetropia predominates; and although he indicates that he had a larger proportion of myopes than of hypermetropes in his experience, and that the medium grades of hypermetropia are not very common, his results are not extremely different from those which I would urge as correct.

[1] Read at the Twenty-sixth Annual Meeting of the American Ophthalmological Society, July 16, 1890.

[1] Read before the Ophthalmic Section of the American Medical Association, May, 1890. Journ. Am. Med. Assoc., Jan. 1891.

In previous publications[1] I have brought together as completely as possible all the investigations to date of the refraction of the eyes of school-children and others, in the endeavor to learn what is the prevailing refraction of the human eye: with the result of showing a decided preponderance of hypermetropia, a small percentage of emmetropia, and a varying proportion of myopia, depending upon the age, class, and education of those examined. Divergent as were the results which had been obtained by various investigators, the consensus of them all gave distinct pointings, and critical study of the methods used in each examination rarely failed to give full explanation for the deviations from the average result.

These results have hardly received wide acceptance, reiterated as they have been by many of the best students of the subject, and they have been given little of their due importance in practice. Theoretically, it is generally conceded that all children, as well as the new-born, are usually hypermetropic, yet it is constantly being re-discovered as a new fact, peculiar to some special group of individuals, and is employed as a positive proof of any theory that needs support. The frequency and the importance of refraction errors (in many cases) are incontestable, and will be little weakened by such misuse of the facts; yet it does not speak well for the judgment of the profession that men are so prone to ignore or to try to explain away these teachings, except when they have special use to make of them.

Most of the investigations referred to here were undertaken in order to throw light upon the etiology of myopia. They showed a disquieting rise in the percentage of this defect from the lower to the higher classes in schools, and of course there were enthusiasts to raise a hue and cry, thunder at the overburdening of the scholars, and draw all sorts of wide-reaching conclusions from ill-determined and insufficient data. Reaction was inevitable, and Donders, whose dictum, "a myopic eye is a diseased eye," had been the war-cry of the crusade against myopia, led the recoil toward the view that myopia is a mere revolutionary adjustment of the eye to its environment, and wrote: "Were it in my power to eradicate all myopia from the world, I would not do it." To-day Cohn and others are contending that myopia is a curse of civilization, to be fought by the "school physician," and his hygienic dictatorship; while Stilling and others regard all except the high grades with equanimity—rather proud of its prevalence in Germany, as a proof of the national evolution into special fitness for the highest civilization. Hypermetropia, it is held, is a condition of under-development common to the brute, the infant, the savage, and the idiot, and is put off with other childish things when manhood is attained. This view, with various modifications and corollaries, is quite widely held, having gained ground since it was advanced, especially by Landolt and Dor, some twelve years ago, and it is to it particularly that I wish to draw attention.

The short hypermetropic eyeball has always been regarded as in a condition of under-development; yet it is a newer and less prevalent view that hypermetropia is merely a *stage* of incompleteness. It is quite natural that further growth toward the emmetropic standard should be expected of this as of other infantile organs, and this *à priori* view gains strength from the fact that, as Jaeger has shown, the infantile eye lacks about six mm. of its adult axial length. Add to this view the fact that infants are almost invariably hypermetropic, often to a considerable degree, while adults are assumed to be emmetropic, and the position seems hardly open to attack. Further, it has been claimed by some investigators that they have demonstrated this progressive decrease of the juvenile hypermetropia, as when Germann found the average hypermetropia to be 5.3 D. in the first month of life, 3.3 D. in the second month, and 2.3 D. in the earlier years. Hansen also found an average hypermetropia of 1.75 D. in the tenth year, declining to 0.75 D. at the fifteenth.

Decrease in the refraction of eyes, especially of children and young adults, has been frequently observed, not only in cases of progressive myopia, but in a considerable series of hypermetropic eyes, as has been recorded by Drs. Risley, Norris, and others. Yet, I fail to find in any of the instances any reason to believe that such a change was brought about by a physiological growth. All have presented clear evidences of pathological processes, and the combating of these by the usual therapeutic measures for reducing intra-ocular inflammation was followed by a relief of the distressing symptoms usually present, and by a cessation of the change in the refraction. Many of the cases alluded to I have had the privilege of studying, and as others have occurred in my own practice, I have had some experience with the pathological form of the change. But of an increase which could be regarded as healthy, I have met no single instance among many thousand cases.

In a lecture recently published, Macnamara urges that young hypermetropes, even those with absolute hypermetropia, should not be given their correcting glasses, or even under-correcting lenses, for more than the absolutely necessary use at near work, much less for constant wear; and claims that the normal development of the eye, whereby the hypermetropia

[1] American Journal of the Medical Sciences, July, 1885; Transactions of the Seventh International Ophthalmological Congress, 1888.

would be outgrown, might thus be interfered with, and the defect rendered permanent. The same idea had previously occurred to me, and led me to give under-correcting glasses to cases of high hypermetropia, for I had seen enough cases of this kind in which five years had wrought no change in the refraction to feel confident that *under the full-correcting glasses* hypermetropia did not tend to decrease. I have since found occasion in some of these instances to increase the convex lens, because the patient gave evidence of requiring fuller correction. In no case have I observed decrease in the hypermetropia, and I am now wholly sceptical as to its occurrence, and shall rarely repeat the experiment.

Inclining to reject this view, then, as being unsupported by any facts derived from my own experience, and conflicting with much that I have observed, it remains to be seen whether it is tenable in the light of the studies of the eyes of the children in the schools. Some supporting results have been already cited. Are they corroborated by the general result or by other reliable investigations? My answer must be in the negative, since the small decline observed in the hypermetropia seems quite fully accounted for by the causes of pathological distention, which are known to be at work during childhood.

The study of the average refraction of children will be best begun by examining the findings as to the eyes of newborn infants, as to which five investigations, those of Ulrich, Bjerrum, Schleich, Horstmann, and Germann, are available. (See Table I.) Germann found 19.11 per cent. of infants to have hypermetropia = 9 to 12, and 50 per cent. hypermetropia = 4.5 to 8 D. in the first month; while later there were none over 8, and only 14 = 24 per cent. over 4 D. In his young children he found three eyes with hypermetropia = 7, 8, and 9 D., respectively; 2 = 6, 2 = 5.5, and 7 = 4.5: only 14 = 12 per cent. over 4 D. Yet Schleich found but 1 in 300 as high as 8, and $\frac{1}{31}$ = 7 D.; and none of the other investigators met any such grades. The high average hypermetropia shown by the table rests, therefore, upon the work of Germann and Schleich upon 520 eyes; while among 414 eyes examined by others the average was only 2.6 D.; and among 756 eyes, as to which the grade is not specifically noted, the lower grades seem to have predominated, *e. g.*, 2 to 2.5 among Koenigstein's 562 cases. Horstmann's very careful work was done after the first week of life, and it is highly probable that just as he saw practically nothing of the retinal extravasations frequently met in the first week, so, too, he did not see the accompanying swollen disc, the temporary prominence of which was probably measured by the others. Thus only can we understand the remarkable decrease of 2 D. in the average hypermetropia from the first to the second month of life (from 5.37 to 3.30) found by Germann. It seems probable that the average hypermetropia about birth is rather below than above 3 D.

Passing on to the results in young children not yet of school age (Germann's were from one and

TABLE I.—REFRACTION OF NEWBORN INFANTS.

Hypermetropic eyes,	0.5	1.0	1.25	2.0	2.5	3.0	3.25	3.5	3.75	4.0	4.5	5.0	5.5	6.0	6.25	7	8	9	10	11	12	?
934	4	56	6	223	14	95	8	4	7	220	18	72	25	75	11	65	1	12	2	2	3	14

Aggregate hypermetropia, 3511. Average hypermetropia, 3.76.

TABLE II.—REFRACTION OF VERY YOUNG CHILDREN.

Hypermetropic eyes,	0.5	0.75	1.0	1.25	1.5	2.0	2.5	2.75	3.0	3.25	3.5	4.0	4.5	5.0	5.5	6	7	8	9
339	28	1	82	3	50	65	29	2	31	2	4	22	7	5	2	3	1	1	1

Aggregate hypermetropia, 710. Average hypermetropia, 2.10.

TABLE III.—REFRACTION GRADES IN THE SCHOOLS.

Age	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	>20
Hypermetropic eyes	212	222	281	366	795	955	1044	889	849	454	381	400	338	143	50	151
Average hypermetropia,	1.15	1.27	1.08	1.23	1.48	1.24	1.29	1.30	1.09	1.27	1.26	1.08	1.09	1.00	1.03	1.43

Some caution is probably necessary in accepting as general the results of several of the investigations, even though they give evidence of rather special accuracy. Their discordance with other results, apparently as carefully obtained, brings their weight somewhat into question, and indicates that, though perfectly accurate, they may be accidental. Thus

one-half to ten years, but unschooled), the few available records are as in Table II.

Only Horstmann's earlier study differs from the rather remarkable coincidence of the other figures, with which, too, a further study of his seems to have been in close accord. We may, therefore, accept this average as a little above 2 D., as shown.

Turning now to the results in the schools, and using, as before, every group of figures which affords the requisite data as to age and grade of refraction, we obtain from the studies of Callan, Dennett (Hyde Park and Nantucket), Howe, Emmert, Risley, Collard, Van Anrooy, Hansen, and myself the results shown in Table III.

An almost unvarying grade of hypermetropia would seem to be the average during this period, for the utmost variation is less than 5 D., and even this may be regarded as perhaps accidental. Much of the variation is due to Hansen's figures, his 412 eyes with an average hypermetropia = 1.75 at ten years, and 242 eyes with only hypermetropia = 0.75 at fourteen, change the averages at those ages from 1.20 and 1.22 to 1.48 and 1.09. A very slight downward tendency appears when we sum up the results for each five years of life, the average grade being 1.31 for the second period, 1.24 for the third, and 1.13 for the fourth; that for the whole 7530 eyes being 1.24 D. Data are lacking from which to endeavor to compute the average in early adult life—Seggel's examination of recruits in the Munich garrison stands almost alone. He found with the test-glasses an average hypermetropia = 0.40 in more than 3000 eyes.

Such, then, is the evidence bearing upon our question which I am able to find in the literature; figures which, taken at their face value as all of equal weight, go but a short way toward proving any notable decline in the hypermetropia with the growth of the individual; yet it requires no deep study of the investigations furnishing these results to convince one that they are far from being all of equal value. Further, there are many studies which do not furnish their results in shape for our tabulation, yet are very distinct in their pointings, and probably more trustworthy than some of those used. The strongest case possible has been made for the view that hypermetropia is outgrown, and while I do not propose to undertake the invidious task of showing the flaws in the studies cited, I will point out some of the investigations which seem to be of most weight, and offsetting more or less the results above given.

In his study at Schreiberhau under atropine, Cohn found the average hypermetropia of 295 eyes of children, six to thirteen years of age, to be 1.20 D., with no relation of the grade to the age. Callan, among 346 eyes of negro pupils, found the average grade 1.23 D. present in all ages from six to nineteen years with only accidental variations. Schadow, among the 240 hypermetropic eyes which he studied in Borchum, found an average of 1 D. at seven to eight, 1.7 at nine to ten, and intermediate grades at the other ages (six to fourteen years). Conrad found an average hypermetropia of about 1.25 among his younger pupils (aged six years), with rather higher grades in the next years. Emmert, among his 3279 hypermetropic eyes found an average of 1.16 in the five to ten, 1.38 in the eleven to fifteen, and 1.31 in the sixteen to twenty, the general average being 1.31 D.

Numerous other points could readily be cited in support of the conclusion which I have drawn from my study, that there is a very insignificant decline, if any, in the grade of hypermetropia during school life, and when the occurrence of quite frequent pathological progression toward myopia at these ages is taken into consideration, the surprise must be that the decline is so small. There is some evidence that higher averages of hypermetropia are to be found before the school period than later, but a number of considerations explain away, to a great extent, this apparent showing. All of the reliable measurements of refraction of the very young have been made under a mydriatic; and while far from believing that this introduces any element of error, I must hold them as not strictly comparable with the results obtained without a mydriatic. The grades of hypermetropia met in mydriatic work are in no need of being scaled down, for the reason sometimes urged that the mydriatic must be discounted because it gives a fictitious hypermetropia. Properly used, the mydriatic can only have increased the accuracy of the results. But to make them really comparable, the averages found without a mydriatic most certainly need to be scaled up—are subject to a considerable increment to represent the latent hypermetropia which escaped measurement. The use of the ophthalmoscope, which was all too rare in the investigations cited, can do something toward this end; but only an ultra-enthusiastic ophthalmoscopist could close his eyes to its very numerous shortcomings, and believe that its results could not be decidedly improved upon. One of the investigators quoted above questions his results on the ground that with the ophthalmoscope he was measuring hypermetropia of his own instead of that of the patient; yet a comparison of his objective results show that while he *uncovered* hypermetropia in thirty-five eyes which had no manifest hypermetropia, he failed to see the hypermetropia with the ophthalmoscope in 105 eyes which had already revealed it with the test-glasses. Such results are common among the younger pupils; but my own study of medical students shows that the same thing holds among the elder. Not only did the opthalmoscopic measurement raise the percentage of hypermetropic eyes from 26 per cent. to 72 per cent., but it also increased the average hypermetropia from 0.57 to 0.85 D. So, too, Cohn found among his 299 atropized eyes 98 per cent. of hypermetropia, and an average of 1.20 D., where, without the mydri-

atic, there had been but 82 per cent. hypermetropia, with an average of 0.75 D. Reasons have already been given for the belief that the average hypermetropia at birth is below 3 D., and we here see that the 1.25 of school life should be considered to represent a real average of about 2 D.; so I believe we shall not go far astray if we accept a dioptre and a half as representing the extreme limit of the real average decline in the refraction from birth to adult life.

Such a change in the refraction is far from unimportant, and would abundantly serve the purpose of those who claim that hypermetropia is outgrown, could they adduce any evidence that it is due to physiological growth. In the utter absence of any such evidence, so far as I am aware, and with the all too probable explanation that the pathological progress toward myopia is alone responsible for the change in the many, as it undoubtedly is in the few, my position of scepticism as to any normal decrease in hypermetropia seems fully justified. The burden of proof certainly rests upon those who wish to uphold such a view.

Two arguments deserve notice in closing. In twenty sections of the eyes of newborn infants, Von Jaeger found the average axial length to be 17.5 mm. as against 23.4 mm. in as many adult eyeballs. Yet, these were by no means the shallow eye-balls of high hypermetropia, for in almost every instance the axis was the greatest diameter of the globe, the vertical average being but 16.4 mm., and the horizontal 17.2 mm. While such an axial length in an adult eye might correspond with a hypermetropia of some 35 D., it must not be forgotten that the infantile lens has its full adult thickness, although its diameter is only 6.3 mm. instead of nearly 9 mm., and consequently that its curvatures are such as probably, even in its comparatively homogeneous condition, fully compensate for the proximity of the retina. Whether it has a proportionately forward position,[1] as indicated by the shallow anterior chamber, need not be discussed until some evidence is brought forward to show that the other compensation would not be complete. If it can nearly compensate for so high a grade of axial shortening, it will be difficult to prove that it is not fully competent, however wonderful it may seem, that the eye-ball should undergo such changes in its dimensions without alteration of its refraction.

The other point which deserves a passing notice is the view that the tendency toward myopia is an evolutionary adjustment of the eye-ball for the demands of near-work to which it is subjected in modern civilized communities. Until proof is adduced to show that myopia is actually inherited, such a view has no claim to be treated as even a scientific hypothesis; and its demonstration is almost impossible. It has been repeatedly seen that scoliosis and myopia were developed together by faulty positions of school-children, especially in writing, and whoever undertakes to champion the evolutionary meaning and value of the one may well be challenged to uphold the same view as to the other.

[1] It is quite probable that many of the cases of myopia found at birth, some of which have been observed to decrease in the following months, have been due to a forward displacement or subluxation of the lens.

A CASE OF TREPHINING FOR DEPRESSED FRACTURE AND ENDOCRANIAL HÆMORRHAGE.[1]

BY SPENCE REDMAN, M.D.,
OF PLATTE CITY, MO.

ON November 1, 1890, E. M., aged three years, while playing in the pasture was kicked upon the forehead by an unshod mule. He climbed over the fence and ran to the house, about fifty yards distant.

I saw him one and one-half hours after the accident. He was unconscious, although I learned from his parents that he was able to speak for twenty or thirty minutes after returning to the house. Both pupils were widely dilated and would not respond to light. The pulse was rapid (120 per minute), regular, but wiry. His respiration was 30 and labored, soon becoming stertorous. His axillary temperature was $99\frac{3}{5}°$. He vomited every few minutes and passed his urine involuntarily. When I first saw him the muscles of the right arm and leg twitched incessantly. These movements are best described as rhythmic clonic spasms, and were most marked in the muscles of the forearm, and increased in severity up to the time of the operation. He held his head slightly to the left side. A horse-shoe-shaped scalp wound four inches long was discovered on the right side, the centre being immediately over and one-quarter of an inch above the right eye, the two ends extending upward.

The scalp was well shaved and the wound thoroughly cleansed with bichloride solution. The flap was then raised and a fracture of the frontal bone one and a half inches long was found. It was situated midway on a line drawn from the glabella to the superior stephanion. Its direction was transverse and half an inch of the central portion was depressed about one-fourth of an inch. Fearing that the internal table was more extensively fractured, and being convinced that a clot had formed from a rupture of one of the anterior branches of the middle meningeal artery, I trephined three hours after the injury, being assisted by Drs. Baldwin and Coffey. A hypodermic injection of morphine and atropine was given and the patient placed under the influence of chloroform. The instruments were sterilized by heat, placed in a carbolized solution, and a 1-to-2000 corrosive sublimate solution was provided for the sponges. A button, including the depressed portion of the external table, was removed

[1] Read before the Medical Society of the Missouri Valley, December, 1890.

with a three-quarter-inch Galt trephine. The internal table was found to be extensively fractured—a fissure at right angles to the transverse fracture, which also involved the internal table, extending to within a short distance of the orbit. The internal table on the outer side of this was depressed and considerable trouble was experienced in elevating it. A clot about three inches in diameter, the greater portion of which was below and back of the trephine opening, was removed with the finger and spoon. The wound was then thoroughly washed out with bichloride solution and the dura found considerably contused and containing a few very small punctures; it did not bulge in the opening and was not incised. A few strands of catgut were placed in the wound to effect drainage, and the scalp closed with continuous catgut and four interrupted silk sutures, except one-half inch of the lower portion.

The usual antiseptic dressings were applied and held in place by adhesive plaster.

Immediately upon recovery from the chloroform the patient was able to talk, and there were no more muscular tremors. Occasional vomiting, however, continued for thirty-six hours. The patient was put upon milk diet and one or two doses of morphine were given daily to insure quiet. The wound was dressed fourteen hours after the operation, at which time the catgut drain was removed, as there was not sufficient discharge to warrant its retention. At this time the pupils were but slightly dilated and responded to light; pulse was 90, respiration 20, temperature 99°, and patient complained of slight pain in the head.

The wound healed by first intention, save the portion left open for drainage, which had closed by granulation at the end of ten days. At the present time, one and one-half months after operation, patient is in every respect well, and the button-hole partially filled with fibrous tissue.

I regard the foregoing case as interesting and worthy of consideration, not only because the rapid subsidence of serious brain symptoms adds another link to the now long chain of cases that make early operative interference imperative when there is compression of brain tissue, be it from depressed fracture or hæmorrhage, but also because it, in the main, bears out the statement that centres of special sense and voluntary motion exist and can be pretty accurately mapped out upon the skull. In connection with this it must be remembered that the relations between the brain and skull differ at different ages. Owing to the imperfect development of the frontal lobes in the child, as Hamy has pointed out, the fissure of Rolando lies much farther forward and is more oblique (52°) in its direction. Symington has also told us that the Sylvian fissure is much farther above the squamo-parietal suture in the child than in the adult—from one-half to one inch above. The adult relation of these parts is probably not attained until the ninth or tenth year.

It is owing to this fact, in the case I have just recorded, in which the injury was well forward, that symptoms showing compression of centres as far back as those for the movement of the opposite leg were present.

Aphasia in this case must have been due to pressure on the right inferior frontal convolution, and while we generally expect aphasia to be the result of injury to the left hemisphere, yet several cases have been recorded in which it followed disease of the right lobe and of lesion of the left in which it was absent.

As a general rule, the seat of speech may be said to depend on the person being either right or left-brained. Most persons are right-handed and left-brained; hence, aphasia is generally due to lesion of the left hemisphere. My case departs from this rule, however, in that the boy is right-handed.

According to Kuhn, the most constant, and by far most valuable, symptom of hæmorrhage from the middle meningeal artery is a certain period of time between the accident and unconsciousness. This period is longer or shorter in accordance with the size of the artery, and is due to the fact that a certain length of time is necessary for enough blood to accumulate to produce unconsciousness by pressure. In the case I have described it was between twenty and thirty minutes.

While there was no hemiplegia (the next most valuable sign of hæmorrhage) in the case, I am convinced that the muscular tremors were warnings, and that the arm and leg would shortly have become paralyzed. The rapid stertorous breathing, frequent pulse, dilated immobile pupils, and elevated temperature all pointed to hæmorrhage, but they had not the diagnostic importance of the lapse of time before unconsciousness and hemiplegia.

I shall not burden the reader with statistics showing the importance of operative treatment, since I feel sure all will agree that when there is reasonable ground to believe that the middle meningeal or any of its branches has been injured, the skull should be opened. The position for the opening must be determined by the symptoms and not the location of the injury, since the artery is not infrequently ruptured on the opposite side to the skull wound. Failure to recognize this fact has caused many lives to be lost. Had the aphasia in my case continued after the opening on the right side had been made, I should have felt justified in trephining over the left inferior frontal lobe, for we sometimes have rupture of both middle meningeal arteries from the same blow.

Two things are, in my opinion, imperative in all operative procedures upon the brain, viz.: thorough drainage and antisepsis. It is chiefly to these that I attribute the success of the operation.

The advisability of re-implanting the trephine button is still a mooted question. As even large

portions of the skull can be removed and the opening left to heal over with fibrous tissue, the advantages to be gained by implantation of the button or transplantation of bone from an animal can hardly repay the delay in healing. As most operations are performed for pressure, and implantation causes a flattening of the skull surface, it would seem an unwise procedure. For these reasons I have never replaced it; however, should it be desired to close the opening with osseous tissue, McEwan's plan is preferable to replacing the entire button, as by the latter plan there is danger of necrosis.

PELVIMETRY FOR THE GENERAL PRACTITIONER.

BY J. WHITRIDGE WILLIAMS, M.D.,
OF BALTIMORE.

THE subject of pelvimetry, important as it is, is usually totally neglected in most of our medical schools, and any knowledge that the practitioner has of the subject he has been obliged to glean for himself. And he receives but little encouragement to pursue its study when he reads Lusk's statement that in our native American women abnormal pelves are rare, and hears physicians of experience state that in thousands of cases they have never met with a single deformed pelvis; though they will willingly admit that they have performed craniotomy on numerous occasions.

Of course, these statements apply only to those marked cases of deformity which no one could fail to recognize after a most casual examination.

While the extreme degrees of deformity may not be as frequent here as in Europe, still they do occur, and that often enough for us all to be on the lookout for them.

These, however, constitute only a small portion of contracted pelves; and through our neglect of pelvic measurement we lose sight of the far more frequent cases of moderate contraction, in which there is no absolute bony resistance to the passage of the child, but still resistance enough to make the labor most difficult and dangerous, or to cause such abnormalities in the position or presentation of the fœtus that its delivery may become almost impossible. Michaelis called attention to this fact years ago, and stated that the evil effects of a moderately contracted pelvis were due, not so much directly to the bony resistance as to its effects upon the position and presentation of the child, and showed that transverse presentations occurred from four to five times more often, and prolapse of the cord alongside of the presenting head ten times more often, in contracted than in normal pelves.

In the German institutions, where pelvic measurements are an integral part of the conduct of each labor case, the frequency of contracted pelves—that is, pelves with a conjugata vera of 9½ cm. (3¾ inches) and less, was estimated at from 13 to 14 per cent., the general average being about 14 per cent. or one-seventh of all cases. Admitting that the ratio is somewhat smaller in America, which we cannot positively affirm, for, as far as I know, no one in this country has measured a sufficient number of consecutive cases to obtain reliable estimates, still we cannot afford to attend from one-seventh to one-eighth of our obstetrical cases in the dark and then talk of being skilful and scientific obstetricians.

History.—Our knowledge of contracted pelvis is of comparatively recent date; for to the ancients the condition was unknown and they believed that the child was born by its own efforts, aided by the mobility of all the pelvic bones. It was not until the latter part of the sixteenth century that Aurantius first discovered the contracted pelvis as an anatomical fact. This knowledge was first practically applied by Deventer in the first part of the eighteenth century, who rather accurately described in his book, *A New Light for Midwives*, the principal forms of contracted pelvis, namely, the justo-minor and the flattened, and their effects upon the mechanism of labor, and upon the fœtal head. In the middle of the eighteenth century flourished the great Smellie, who not only recognized the deformity and its effects but was the first to estimate the conjugata vera by measuring manually the conjugata diagonalis, and who recorded cases in which the antero-posterior diameter was not more than one and a half inches. At the end of the century, Baudelocque introduced the external methods of pelvic measurement. He placed the greatest reliance on the external measurements, especially on the external conjugate, which he discovered, and from which he believed he could calculate the conjugata vera with almost absolute exactness, his results only varying a few lines.

These three men laid the foundations for the doctrine of contracted pelvis and pelvimetry; but the honor of placing the subject upon a scientific basis must be ascribed to the famous obstetricians of Kiel, Michaelis and his successor Litzmann. These two measured the pelves of all the cases that came under their care and were thus able to study the numerical proportion of contracted to normal pelves, thereby showing that contraction was far more frequent than was generally supposed. By accurately observing the mechanism in these cases, they were able to present the subject in so clear and so exhaustive a light that they are still our standard authorities.

Since the time of Michaelis nearly every Continental obstetrician of prominence has devoted considerable time to the subject, without, however, add-

ing much of real importance to the able work of his predecessors, while we, on the other hand, have allowed the subject to fall into almost total neglect.

Aims.—The scientific obstetrician naturally aims to learn all that is possible about the deformity in each case, and will put himself to considerable pains to determine exactly what form of contracted pelvis he has before him, and exactly how and to what extent it is contracted. To do this requires special training and practice, such as the general practitioner is not supposed to possess and which naturally cannot be demanded of him. But he should be expected to recognize the ordinary forms, especially the generally-contracted or justo-minor, and the flattened rhachitic or non-rhachitic pelvis, and should be able not only to recognize the species of deformity, but also approximately to estimate the amount of contraction, especially in the antero-posterior direction. Indeed, on account of the rarity of the other forms of contraction and the extreme difficulty in estimating the other diameters and the varying results of different methods, pelvimetry for the general practitioner resolves itself into recognizing a flattened pelvis and estimating the conjugata vera.

Methods.—Pelvimetry may be divided into external and internal methods; only the latter, however, being capable of giving anything like accurate results. External measurements, except by means of a pelvimeter—and almost any form will do—are utterly worthless, and even those made by means of a pelvimeter point only to the species of the deformity without giving definite information as to its degree.

The principal measurements of the pelvis are three in number:

1. Distantia spinarum—the distance between the anterior superior iliac spines.

2. Distantia cristarum—the distance between the most widely removed points of the iliac crests.

3. Conjugata externa or Baudelocque's diameter—the distance from the depression below the spine of the last lumbar vertebra to the outer surfaces of the symphysis pubis.

Of these, the first two are by far the most important, and they average 26 and 29 cm. (10¼ and 11½ in.) respectively. Mere variations in measurement are not of much importance, so long as the relative proportion between the two remains the same. The careful work of Scheffer some twenty-five years ago showed that the measurements do not justify us in drawing conclusions as to the transverse diametres of the superior strait, as was formerly supposed. Scheffer showed that with equal external measurements, the transverse diameter of the superior strait might show a difference of 3.3 cm. Skutsch has lately verified these results.

While these measurements do not give the much desired transverse diameter, they do give us much valuable information as to the shape of the pelvis. If, for example, in connection with a shortened conjugata vera, both the measurements are markedly decreased, but still retain their relative proportion to each other, we are justified in concluding that we have to deal with a generally-contracted pelvis.

In the rhachitic pelvis, this relation between the spines and crests vanishes, and the distantia spinarum increases at the expense of the distantia cristarum, and may even exceed it, according to the extent to which the iliac bones are flared out. In this latter case, of course, the distantia cristarum cannot be measured in the usual way, and to obtain it we measure the crests at a point from 6 to 7 cm. behind the spine.

In the simple non-rhachitic flattened pelvis we do not get this increase of the distantia spinarum at the expense of the distantia cristarum, for the iliac bones are not flared out, as in the rhachitic form. Baudelocque's diameter may be dispensed with by the practitioner, for the researches of Michaelis, Crede, Schröder, Dohrn, and Skutsch show that it is not nearly so exact as its originator considered it when he stated that, by deducting three inches from it, he obtained the vera with great accuracy in thirty-five cases, his results differing only a line.

This diameter varies in the living from 16 to 23½ cm. (6½ to 9½ ins.), with an average of about 20 or 21 cm. (8 to 8¼ ins.), and to obtain the vera the average amount to be substracted is 9.2 cm. (3½ ins.). But the results vary so much that they cannot be relied upon, and the most that we can say is that a Baudelocque's diameter of less than 16 cm. (6.4 ins.) indicates a contracted pelvis in nearly all cases; less than 18 to 19 cm. (7.2 ins.) in about half the cases; while one of more than 20 to 21 cm. (8 ins.) rarely does so.

Internal methods.—The main point of importance for the general practitioner is the estimation of the conjugata vera, and for its determination many methods have been devised. All the instrumental methods leave much to be desired, for they are always inaccurate or cumbersome, or both. And all methods for measuring the vera directly with the hand are inaccurate, and require for their performance the introduction of the whole hand into the vagina. So, from a practical point of view our chief reliance must be placed upon its estimation from the conjugata diagonalis; that is, the distance from the promontory of the sacrum to the lower margin of the symphysis pubis or the ligamentum arcuatum. To measure the diagonalis, the patient is placed in the dorsal position, and, if in bed, a small pillow is placed under her hips, so that the forearm of the examiner may be depressed to the proper position;

then the index and middle fingers of the left hand, lying one upon the other, are introduced into the vagina, while the remaining fingers are folded against the palm of the hand and serve to press up the perineum. Then the forearm is depressed, and we attempt to reach the sacral promontory; having reached it, we press the ulnar side of the tip of the middle finger against it and retain it in this position, while with the radial side of the same hand we press hard against the lower margin of the symphysis. Then with the finger-nail of the index finger of the right hand we mark the point at which the ligamentum arcuatum touches the measuring finger. The distance from the tip of the middle finger to this mark gives the desired measurement.

This method, by a little practice, gives almost perfectly accurate results—accurate within ¾ mm. Knowing the diagonalis, it is easy to estimate the vera by subtracting from it a given sum—1½ to 2 cm. (three- to four-fifths of an inch). The amount to be subtracted varies under different circumstances, as will be readily understood when we consider our measurements as forming a triangle, of which the conjugata vera and the diagonalis form two sides and the symphysis the base. It will then be readily seen that, with an increase in height of the symphysis, the diagonalis becomes longer in proportion to the vera, and, consequently, the amount to be subtracted is increased. More important than this, however, is the inclination of the symphysis, or the angle it forms with the conjugata vera, for it is readily seen that the greater this angle becomes the longer becomes the diagonalis, and the greater the amount to be deducted to estimate the vera. In general terms, then, the higher and more perpendicular the symphysis, the greater is the amount to be deducted from the diagonalis—ordinarily a little more than 1½ or 1¾ cm. (three-fifths of an inch) in normal and generally-contracted, and 2 cm. (four-fifths of an inch), or a little less, in flattened pelves. This method gives excellent results in lying-in women, and is readily applied in the non-pregnant, especially if multiparous, though it is usually more or less painful.

In non-pregnant women with lax abdominal walls we may employ the so-called external direct method to which Credé and Hardie called attention some years ago, and which Dr. H. A. Kelly is now engaged in studying and testing.

In this method the woman is placed on her back and the abdominal walls gently pressed in by the tips of the fingers of the left hand, till the tip of the middle finger rests over the promontory; then the palmar surface of the hand is brought down upon the symphysis, and with the finger-nail of the right index-finger we mark the point at which the palmar surface crosses the upper surface of the symphysis. This distance, without making any deduction for the thickness of the abdominal walls, represents the conjugata vera with tolerable exactness—within from ½ to 1 cm.—and affords a ready, accurate, and convenient method of measurement for gynecological cases and in the early months of pregnancy.

With these comparatively simple methods at our disposal, I do not consider that we are justified in attempting to conduct a labor case in which there is the slightest possibility of the existence of a contracted pelvis, without measuring the pelvis before proceeding to any action whatsoever.

Indeed, I do not think Fritsch was far wrong when he said "that the physician who would conduct a pathological labor case without mensuration is as inexcusable as he who does not examine the urine when œdema is present"; or Dohrn, who says "that the physician who does not measure the pelvis is comparable to one who diagnoses heart and lung troubles without the aid of auscultation and percussion." Such being the sentiments of these eminent men, it certainly behooves us to receive them with respect and to attempt to follow their advice. To attain results worthy of attention, practice in the art is absolutely necessary, and the only way by which we can attain the requisite skill is by taking every possible opportunity to measure the pelvis. I would therefore advise all who wish to raise their obstetric work above the level of mere midwifery to make it a part of the routine of the first obstetric examination, in every case, to measure the conjugata diagonalis, and from it to estimate the vera; and if it be at all contracted, to take the external measurements, especially the distantia spinarum and cristarum, and from these three measurements attempt to determine the species, and, roughly speaking, the degree of the deformity.

Anyone who will regularly pursue this course will be amazed to find how many moderately-contracted pelves do exist, and will then be able to explain in a rational way many difficult cases of transverse and other presentations, which previously he merely turned or delivered by forceps or craniotomy, and whose abnormal presentation or mechanism he ascribed to some freak of nature rather than to a rational and sufficient cause.

Of course, the practical man may object that what we gain by this is the mere satisfaction of a scientific explanation for hitherto inexplicable facts, and say that it is all well enough for those who pretend to be scientific, but to the practical, every-day man it is useless and not worth the time consumed.

If this were all that we gained from pelvimetry, I contend that it would still be worth the trouble.

But this, while important, is only a small part of what we gain. What we really gain is a correct diagnosis and prognosis, and with these made, treatment follows as a matter of course.

What has been said of the results of pelvimetry in moderate contraction applies far more forcibly to those cases in which more marked contraction exists. For in these cases the results of measurement should be almost our only guide to correct treatment, and should decide for us whether we are to propose Cæsarean section, resort to forceps or version, or allow nature to take its course. With a pelvis of 5½ cm. (2¼ in.) or less, we have an absolute indication for Cæsarean section, for it is attended with as little or less danger to the mother than craniotomy, not to speak of the great gain of saving all the children if resorted to at the proper time. In pelves between 5½ to 7½ cm. (2¼ to 3 in.) we have the relative indication for Cæsarean section—that is, we must offer our patient the choice between it and craniotomy, with the chances in favor of Cæsarean section.

If we measured all our labor cases, would we not more frequently than now discover those requiring abdominal section and promptly institute the proper treatment, instead of waiting till the woman has been in labor many hours, or perhaps days, and, after having exhausted her by numerous attempts at forcing delivery, to propose a capital operation?

It is the neglect of making a correct diagnosis that makes our Cæsarean section statistics so much inferior to those of our German confrères: I am confident that very few of us are willing to admit that it is due to inferior operative skill on our part. It is entirely due to the fact that most of our operations are done on exhausted or practically dying women who naturally cannot be expected to recover; while the Germans determine on the operation before labor sets in, or certainly after the first examination, and do not allow the case to go on blindly.

What has been said about the Cæsarean section applies with equal force to the induction of premature labor; and there can be no possible excuse for allowing a woman—after a difficult craniotomy, for example—to go on to full term again without measuring the pelvis and determining beforehand what should be done. With a pelvis of 8 cm. (3¼ in.) and less, the operation is certainly indicated, and with our present aseptic methods should hardly be more dangerous than a normal labor, and far less so than the craniotomy that is sure to follow if the patient is allowed to go on to term.

I hope these remarks will lead some of us who have hitherto neglected this important part of obstetrics to take up its study; I am sure that, adding the estimation of the diagonalis to the ordinary obstetric examination in each case, they will be surprised to find how many pelves are contracted within moderate limits, and will occasionally find cases contracted to 8 cm. and less.

In these latter cases, unless the physician be a skilful operator and is prepared to perform Cæsarean section under the strictest aseptic precautions, I do not consider that he does his duty to his patient if, when he has made his diagnosis, he does not immediately call in a competent specialist, who shall decide what is to be done. If an operation be decided upon, he will be able to operate upon a patient with the chances in her favor, instead of upon the usual exhausted and dying case.

APPARENT ANTAGONISM BETWEEN THE STREPTOCOCCI OF ERYSIPELAS AND SYPHILIS.

BY ORVILLE HORWITZ, B.S., M.D.,

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IT is generally conceded at the present day that syphilis is due to a specific microbe. The cases here recounted would seem to indicate that this disease is due to a pathogenic microörganism, and that the poison produced by the microbe of syphilis is antagonized by that which produces erysipelas:

CASE I.—During the first week of June, 1890, a married man, aged forty years, who stated that he was a clerk, presented himself at the Jefferson Hospital for treatment. He was suffering from phagædenic chancre. The sore appeared ten days after sexual connection and was spreading rapidly. The foreskin was œdematous, with phymosis as a complication. Circumcision was performed, the phagædena treated in the usual manner, and the patient sent to the surgical ward. In the course of a week the inguinal and post-cervical glands began to enlarge, and two weeks later the patient suffered greatly, especially at night, from rheumatic pains in his bones.

One week after admission to the hospital he had a chill, followed by high fever, which lasted thirty-six hours. A superficial pustular eruption, interspersed with a tubercular eruption, soon after appeared on the body, accompanied with alopecia and mucous patches in the mouth.

The early appearance of the pustular eruption proved the case to be one of malignant syphilis.

The usual specific treatment was ordered, and three weeks afterwards he was discharged from the ward and sent to the surgical dispensary, where he presented himself at irregular intervals.

Four months after the appearance of the initial lesion the patient was admitted to the venereal ward of the Philadelphia Hospital completely covered with deep rupial eruptions. He was very weak and anæmic.

The usual specific treatment was employed without very marked improvement. After having been in the hospital about ten days he was seized with a chill, followed by high fever. Erysipelas appeared on the nose and gradually spread over the face and neck. He was at once isolated and the specific treatment was replaced by iron, quinine, and free stimulation.

The patient was in such a wretched condition that both the resident physician and the writer thought recovery impossible; to our great surprise, however, he began to improve, the erysipelas disappeared, and the deep syphilitic sores began to cicatrize, and when he returned to the venereal ward not a single ulcer remained; the deep red scars which covered his body being all that gave evidence of his previous condition.

Specific treatment was once more commenced, and at the end of four weeks he was discharged from the hospital. Mercury in small doses with iodide of potassium is still used, and the patient states that his health is much improved and that he is rapidly gaining in weight.

Case II.—In the early part of July, 1890, the second case presented itself. The patient, according to the popular term was "a man about town." He was suffering from a deep ulcerating gumma of two months standing, situated on the calf of his leg.

The usual treatment was employed. At the end of three weeks there was no improvement, and finding that the patient was suffering from the debilitating effects of the prolonged heat of the season, and was becoming quite weak, he was advised to try the effects of a sojourn at the White Sulphur Springs, and at the same time to continue the prescribed treatment.

At the end of three weeks the writer received an urgent message from the patient to call at his residence. He was found in bed with high fever and suffering from a severe attack of erysipelas of his left leg extending above the knee. While absent from the city he had abandoned all treatment, kept late hours, and indulged in every variety of dissipation. The ulceration was found to be much deeper and to have extended considerably since the last examination. Large doses of iron and quinine with free stimulation were at once prescribed. During convalescence a large slough appeared at the site of the ulceration, and became detached in a few days. The cavity rapidly filled with healthy granulations, and when the erysipelas had disappeared it was found that a scar was all that was left to mark the spot where the gumma had existed. The patient had no anti-syphilitic medicine during his attack of erysipelas.

There has been no occasion for medical treatment since his convalescence, and he is at this time in perfect health.

There is doubtless a marked antagonism between certain classes of specific microbes. Powlanskay has clearly shown that an antagonism exists between the pneumococcus of Friedlander and the bacillus of anthrax, and also between the micrococcus prodigiosus and the streptococcus of erysipelas.

Neumann[1] reports two cases of apparent antagonism between syphilis and erysipelas. His first case was a woman with gumma of the face, who had three attacks of facial erysipelas, followed by the entire disappearance of the syphilitic lesions.

The second was a case of a man, who was attacked with erysipelas six weeks after contracting a chancre. During treatment for the erysipelas, the chancre disappeared. Constitutional symptoms, which were of the mildest type, did not appear until seventy-two days after the attack of erysipelas.

The foregoing cases of syphilis described by the writer, and those reported by Neumann, apparently cured, or at least modified in virulence, by invasions of erysipelas, would seem to indicate that a certain antagonism exists between the microbes of the two diseases, which may have an important bearing on the therapy of the future.

CLINICAL MEMORANDA.

SURGICAL.

Retention of a Foreign Body in the Larynx for Thirty-eight Years.—The following case of a foreign body being retained in the larynx for a long period of time recently came under my notice, and I have thought it of sufficient interest to put on record, especially as the patient's birth, education, and character place the facts beyond reasonable doubt.

C. M. M., white, aged forty-five years, when only seven years old, put an ordinary pin in his mouth while playing, to keep it from another child from whom he had taken it. While running and laughing, it was drawn into the larynx. Sharp pain was felt for a few minutes, but soon passed off, and nothing more was thought of it. These facts were impressed on his memory by the extreme alarm felt at the time, not only by himself but by his family. His health remained good until about fourteen years ago, or twenty-four years after the accident, when his voice became husky and a chronic cough developed, with emaciation and prostration, leading him to believe that he had consumption.

He was treated by several physicians of Augusta, Ga., near which city he then lived, with some benefit, and was assured that his disease was entirely bronchial.

Since then his voice has remained slightly husky, the cough constant and of varying intensity, but on the whole not very annoying, and he has been quite able to attend to his work.

On January 29th, during a fit of violent coughing, a hard, dark object embedded in a mass of mucus, was expelled from the larynx, and on examination proved to be the long-lost and forgotten pin. No blood came up either then or afterward.

Unfortunately, I was not told of this occurrence for some days, and, owing to the man's occupation, more than a week passed before a laryngoscopic examination could be made. This was thoroughly done by Dr. W. Peyre Porcher, with the result here given:

[1] Allg. Wiener med. Zeitung, 1888.

"The patient's throat was found to be susceptible of a very complete inspection. No marks or abrasions were found other than two somewhat inflamed circumscribed areas, situated directly opposite the posterior ends of both ventricles of Morgagni. From the presence of the spots it was inferred that the pin must have lain across the larynx with its two ends embedded in the posterior edge of the two ventricles."

I have been unable to find any record of a foreign body remaining in the air-passages for nearly so long a time. The nearest approach to it is a case quoted by Gross, in which a piece of bone was retained for seventeen years; and a second, in which the retention was for "upwards of eleven years," spontaneous expulsion taking place in both cases. In the first of these cases, it is known that the bone was retained in the lung for a long time, as it produced disease in that organ of so serious a nature as to cause the patient's death.

While it is manifestly impossible for me to prove, in my case, that the pin was in the larynx all these years, the following considerations make it probable:

1. Symptoms of laryngeal irritation for fourteen years, with absence of pulmonary symptoms.

2. The fact that the laryngeal irritation has greatly improved since the removal of the pin.

3. The appearance of the pin shows that it remained in one place for a long time, as it was covered with an incrustation of considerable thickness, its whole diameter being a fraction over one-sixteenth of an inch. Had it migrated through the tissues, it would have been more or less polished, while had it been loose in the trachea, the symptoms would have been so marked as to demand attention and recognition.

Lastly, the discovery of its probable seat in the larynx, and its ejection directly from this organ, would hardly have happened after thirty-eight years of travel.

The pin was almost an inch in length, and a fraction over one-sixteenth of an inch in thickness, the point being slightly bent.

MAZYCK P. RAVENEL, M.D.
CHARLESTON, S. C.

OPHTHALMOLOGICAL.

Subcutaneous Eyelash.—A woman, aged twenty-eight, presented herself at the eye clinic of the Philadelphia Polyclinic on account of a small projection of the skin of the left upper lid just above the line of the lashes. Vision and refraction were practically normal, and the little prominence on the lid, first noticed a week before, caused no symptoms.

On examination, the fold of skin composing the projection was found to be supported upon the curve of an eyelash imprisoned beneath the epidermis. The lash was readily recognizable by focal illumination through the transparent skin and by the wire-like sensation it imparted to the finger. It was drawn out through a small opening; proving to be about 4 mm. long and quite firmly imbedded in the true skin. I make this note of the case because, so far as I know, it is unique.

R. J. PHILLIPS, M.D.,
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ORIGINAL LECTURES.

SOME PHASES OF RHEUMATISM.

A Clinical Lecture delivered at the Philadelphia Hospital.

BY J. H. MUSSER, M.D.,
ATTENDING PHYSICIAN.

[Reported by W. BLAIR STEWART, M.D.]

GENTLEMEN: I show you this morning a series of cases presenting common points of interest in connection with affections of the joints. It is fortunate that you can have an opportunity to observe the many varieties, here presented, of these most common ailments.

The young man whom you now see, twenty-one years of age, whose family history is good, but who has a personal history of venereal disease and of alcoholism, was well until one month ago. About that time he slept in a cold box-car and got his clothes wet. On the next morning he awakened with pain in one knee. The joint was swollen and he could not stand. This swelling was painful, but there was no fever, or at least there was none when he came under my observation three weeks ago. Rest, with no other treatment, except some local applications, was enforced. When admitted the outlines of the joint were entirely effaced. There was distinct effusion, the patella floated, and fluctuation was easily detected, but there was no increase of heat and no redness. We have, therefore, a simple inflammation of the knee-joint of obscure origin. The inflammation was certainly due to exposure, and not to traumatism, but whether it is rheumatic I cannot say positively. The absence of fever and of all evidence of a rheumatic diathesis, as well as the localization of the process in one joint, largely removes the suspicion of rheumatism. It is a case of mild inflammation with hydrarthrosis, due to cold, and must be distinguished from such local inflammatory processes as inflammation of the bursa of the patella, known as house-maid's knee, and from purulent synovitis.

In the former affection there is no swelling of the joint, but swelling of the bursa over the joint. The portion in front is very painful, and tender on pressure, and there are heat, swelling, and fluctuation. Injury of a severe character or long-continued bruising may be associated with the inflammation as a definite cause. On the other hand, the swelling which you see in this case is similar to the swelling and suppuration due to inflammation, save that there is more heat of the joint, while œdema of the skin is present, and possibly uniform redness of the surface. Purulent inflammation is accompanied by more grave general symptoms, fever is marked, and may be of a hectic type, and it rarely occurs without suppuration in other portions of the body due to pyæmia or septicæmia.

SYPHILITIC RHEUMATISM.

This patient presents a different history; the symptoms of which he complains are not confined to one joint, but many joints and other structures are involved. There is a different antecedent history attending the development of these phenomena. It is true that the boy has been subject to rheumatism from childhood, and that his

habits of life and occupation were such as to predispose to attacks of ordinary rheumatism, but we learn further that he has had gonorrhœa six times, and once a suppurating bubo. In October, 1889, he had a chancre, and, subsequently, sore-throat. The latter is the only evidence of secondary manifestations of syphilis which we can discover, and as he states that he has been subject to sore-throat since childhood, it may have been only an expression of the ordinary rheumatic diathesis.

Nearly three months ago the patient was suddenly seized with pain in the right side of his chest. This was followed in a few days by pain in one leg. The pain in the leg was very severe at night, and was soon followed by pain in the other leg, in the breast-bone and in the shoulder-joint, and was accompanied by severe frontal headache. On admission, the pain in the head was so excessive that he was unable to sleep, and tossed the entire night, fretting and crying out in agony.

On examination we find that there is, as you see, very marked tenderness along the sternum; there is also some swelling and tenderness at the junction of the second rib and costal cartilage on the right side. There is some tenderness along the tibia, but no swelling or nodes on the long bones or the clavicles. I find no changes in the shoulder-joints, although they have been painful since the onset of the disease. When I tap the frontal bone there is marked tenderness. The pains in these localities, as I said, are worse at night. They are not lancinating or much increased by movement, but are grinding, boring pains. The general symptoms that accompany the pains are not marked. There is no fever and no disturbance of the gastro-intestinal tract. There is, however, a change in the lymphatic system to which it is important to call attention, namely, enlargement of the supra-trochlear and post-cervical glands. You will observe, therefore, that we have in this case three marked factors, which must be considered in determining the cause of the arthritic and osteal changes. There is undoubtedly a marked rheumatic diathesis present in the individual. On examination of the heart I find, however, no evidence that the rheumatic storm ever included the endocardium in its vortex. The absence of the anæmia that attends, or that rapidly ensues in cases of true rheumatism, and the persistence of the inflammatory process in the joints which were first affected, lead one to exclude the non-infective forms of rheumatism. When I say non-infective, however, I must speak cautiously, for investigations, not only of bacteriologists, but also of clinicians, seem to show the infectious origin of all cases of rheumatism. The foregoing considerations, with the positive involvement of the periosteum and the occurrence of the pain at night, characteristic of another form of infection, lead one to exclude at once simple rheumatism. The influence of the repeated attacks of gonorrhœa need not be considered, for the affection of the joints is unlike that of gonorrhœal rheumatism, as I will show you in another case.

We have, then, to discuss the relation of this man's illness to the manifest syphilitic infection. That syphilis is the cause of this illness can scarcely be gainsaid, when we call to mind, first, the character of the pains and their location; second, the fact that they are increased at night; third, their association with periosteal inflammation; and, finally, the association with them of enlargement of the lymphatic glands, which indicates an infection of the system. These symptoms tally well with our knowledge of the course and phenomena of syphititic rheumatism. I have been able to apply the therapeutic test since the patient entered the ward, and he has been very much relieved by the use of the remedy which always promptly relieves this affection; I mean the iodide of potassium. The drug has been administered freely during the last forty-eight hours, and his head-pain has improved very much, while the joint and periosteal pain is also much lessened.

GONORRHŒAL RHEUMATISM.

The next patient, thirty-two years of age, is a man who at one time, as you can readily see, was of good physique, but who is now considerably emaciated and strikingly anæmic. He was admitted into the hospital on June 27th, presenting a good family history and a record of good health until two and a half years before admission. In 1884 he had gonorrhœa, and in the fall of that year had, for the first time, a slight attack of rheumatism. In 1888 he had a second attack of gonorrhœa, and in 1889 his rheumatism began. At this time he had inflammation in the right hip and knee, and the latter joint was swollen. He was then in the Pennsylvania Hospital for six weeks, and was discharged apparently cured. He soon had a recurrence, however, of the joint trouble, the right knee usually being the seat of the most severe pain and of marked swelling. The occurrence of these attacks of rheumatism prior to admission lead us to inquire more closely, before making a physical examination, into the previous history of the patient, with the view particularly to determine whether he was subject to any ailments in childhood or later life which are manifestations of the rheumatic diathesis. I find an entire absence of indications of this diathesis both in the history and in the lesions now present which mark the remains of previous rheumatic attacks. He has never been subject to sore-throat or to quinsy; he never has had erythemas, or chorea, and he had no joint-symptoms whatever in early life. There are no rheumatic nodules, nor is there any cardiac lesion. Observe, therefore, that the present rheumatic symptoms developed after the occurrence of a specific infection in a man who had never had any form of rheumatism and who was reaching the time of life when inflammatory rheumatism is not likely to develop.

On examination there are some features of the joint-inflammation worthy of study. The inflammation has been almost entirely limited to the right knee, the second phalangeal joint of the forefinger of the right hand, the right shoulder and the right hip. There is very severe pain on moving the shoulder-joint, but I find no evidence of inflammatory change. The hip-joint is also painful on movement, and there is marked tenderness on pressure. The knee and phalangeal joint we can study more closely. The whole of the knee-joint is swollen, slight fluctuation can be readily detected, and the patella floats. On pressure, there is found a point of pain. The joint is quite stiff and the tissues around are pale and, though not œdematous, seem markedly infiltrated. This infiltration of the tissues about the joint is especially distinct at the phalangeal articulation; here, too, there is swelling, stiffness, and

pain on movement, but more strikingly thickening and infiltration of the tissues. There seems to be slight fluctuation. This joint has been the seat of persistent pain, and, indeed, has from the onset been the one particularly affected. The knee has at no time been free from pain as other joints became involved. This fact, with the local changes about the joint and the general symptoms, are, to me, sufficiently marked factors to confirm my belief that the rheumatism is of the infective form, and secondary to gonorrhœa. Observe the record of temperature, which has been carefully taken: the first week after admission there was no marked intermittency, but the temperature remained high—102° to 103°—until rest, diet, warmth and attention to the secretions caused the perturbed system to become quiet. When all complications outside of the rheumatic manifestations were removed, the temperature became regularly intermittent. A morning rise and an evening fall has continued, the intermitting character being persistent, although there has been a gradual decline both in morning and evening temperature, so that now the latter does not rise higher than 100°. This character of temperature is usually seen in gonorrhœal rheumatism. In addition, a manifestation or rather an accompaniment of gonorrhœa and gonorrhœal rheumatism is present to corroborate our opinion. The patient now has a mild ophthalmia, and has had severe attacks of conjunctivitis, undoubtedly of gonorrhœal origin.

SUB-ACUTE INFLAMMATORY RHEUMATISM.

In the same ward with these cases there is another patient with somewhat similar symptoms. His antecedent history is not less striking, but the present phenomena, while showing similarity in that the joints are involved in the disease, differ in many important particulars. The patient is a man twenty-one years of age, of good habits and without a history of venereal disease. He has never followed an occupation which is alleged to predispose to rheumatism. His previous medical history is of special interest. Ten years ago he had an attack of rheumatism in which all the joints were affected and which lasted seven and a half months. Two years afterward—in 1882—he had a second attack, a third in 1884, a fourth in 1885, and a fifth in 1886 in which the legs were affected. Last year he had a sixth attack, which lasted ten weeks, while this year he has had two attacks, the last of which began two months ago. After the third attack the bones of the ankles and toes became slightly ankylosed and their ends enlarged. The striking features of the present attack are fever of a mild type, not rising higher than 101°, and acid sweats. These sweats persist at present, breaking out profusely three or four times daily, but increased action of the skin may be noted at any time if the bedclothes are removed. His underclothing is always slightly damp, and the peculiar exhalations are readily detected. The urine is scanty, very acid, of high specific gravity, high-colored and loaded with urates and uric acid. The joints affected since he has been under observation have varied; at first the ankle-joints were involved, then one elbow, then the knees, and finally other joints. During the two months that he has been under observation all the joints have been once or twice the seat of pain, with swelling, and some heat, but no fluctuation. As you see him now, the pain is most marked in the hips.

On physical examination of the heart, I find a slight thrill and a murmurish sound which appears to indicate an old obstructive lesion at the mitral orifice. You can readily see, and the blood-count shows, that the anæmia which attends repeated or prolonged attacks of rheumatism has taken place. The pallor of the face and mucous membranes, as well as of the fingers, is marked. The blood shows a reduction of the red cells of about 1,000,000—to 3,000,000, per cm.—and a diminution of hæmoglobin of 45 per cent.

It is not difficult to recognize in this case all the manifestations of rheumatism of a subacute type.

I do not know of any group of cases that more forcibly illustrates the importance of getting definite and accurate information regarding the previous history and pathological antecedents of the patient. On the whole, as a class, if looked at superficially, the symptoms in these cases were much alike, and the true recognition of the exact nature of the illness was made possible only by the knowledge of the previous history, as well as the evolution of the present disorder. Exposure, gonorrhœal infection, syphilitic infection, and the rheumatic diathesis antedated each ailment respectively, and indicated not only for diagnostic but for therapeutic purposes the nature of the affection in each individual.

As intimated previously, the knowledge thus acquired is absolutely essential for the proper management of a case. The special cause of the disturbance indicates the means for its relief. Rest and cold or sedative applications were sufficient for the case of hydrarthrosis. A blister might possibly have hastened absorption, while, later, stimulating applications will be of service. Except attention to the functions of the various organs, no internal medication was necessary. So, too, the indication for the treatment of the case of syphilitic rheumatism was clear, and since the patient has been subjected to specific treatment he has improved rapidly. Twenty grains of the iodide of potassium were administered three times daily. Minute doses of the bichloride of mercury will be added later. Not so easy, however, is the treatment of the case of gonorrhœal rheumatism. Such cases are most obstinate. Their long continuance is probably due to persistent infection; it is therefore necessary first to use local means of treatment that diminish urethral discharge and allay urethral inflammation. For this purpose, antiseptic drugs must be employed both internally and locally. We have in one drug, fortunately, a remedy which seems to meet many indications—that is, salol. It is a good drug for rheumatism. It renders the urine alkaline and prevents it from becoming ammoniacal, and at the same time because it is excreted in the form of carbolic acid almost continuously disinfects the urinary passages beyond the urethra. Theoretically, therefore, it would be of the utmost service in all cases of gonorrhœal rheumatism. In addition, local antiseptic means should be used, and if there are urethritis or inflammatory patches, applications should be made directly to them. To detail these methods would go beyond the bounds of this lecture; it is sufficient to refer to them. The other internal remedies advocated for this form of rheumatism are not satisfactory. It is thought that the iodide of potassium is the most potent of all, and no doubt cases have rapidly improved under its administration. It was used in this case

without brilliant results. Often we must take into consideration, just as it was necessary in this case, the general condition of the patient, and base our therapeutic means largely upon indications derived from this state. The nutrition of the patient, the presence or absence of anæmia, and the state of the digestive apparatus all must be inquired into, and each furnishes an indication for treatment. Notably in this form of rheumatism it should be remembered that the patient must be nourished to the highest possible point. You readily see the flabbiness of the tissues, while the reduction of weight and the marked anæmia show that nutrition has been lowered. And I may tell you that no relief of symptoms was secured, not even any diminution in temperature or modification in the type (pyæmic), was observed until the diet of the patient was entirely changed and the most concentrated and nutritious food administered. The diet *par excellence* for these cases is, of course, a milk diet; but when the digestion is good albuminoids of all forms may be used, and hence not only milk but eggs, properly prepared meats, game, oysters, and fish are to be used, and such green or succulent vegetables as are easy of digestion. I fancy that in most of these cases the exclusion of the carbohydrates is important. Starches and sugars in any form, therefore, are not admissible. Since the diet of this man was increased and its character changed, he has gained weight and strength. His rheumatism has markedly improved and the fever has gradually fallen to the norm.

The treatment of the fourth case requires considerable judgment. Of course due attention in these cases also must be paid to the diet, and food somewhat similar to that previously indicated must be used. The peripheral circulation is somewhat at fault, as shown by the cold and bluish extremities, and massage can be employed over the structures that are not the seat of actual inflammation. The anæmic appearance of the patient indicates the use of iron, and there are many therapeutists who would advocate its employment. I am guided very largely by the condition of the urine as to the class of drugs selected, independently of the state of the blood. It seems to me a safe rule that as long as the urine is persistently acid and high colored and of high specific gravity, containing urates and uric acid in excess, it is absolutely necessary to use alkaline medication in some form, or the empiric medication by which we have been able of late years to control the rheumatic process. Hence, alkalies, salicylic acid or its compounds, or the oil of gaultheria, may be employed. I would prefer to use 10 grains of salicylate of sodium every two hours in mint-water with a small amount of whiskey, and persist in the use of the drug until its physiological effects were produced, or relief from the symptoms occurred. I very frequently add to each dose of the salicylate of sodium 5 grains of the bicarbonate of potassium. If the salicylates are not used, and they are often unsuitable because of the condition of the stomach, simple alkalies are indicated. The use of the bicarbonate of potassium, the ordinary neutral mixture, or the iodide of potassium, is of service. These drugs should be given in such doses as would produce within forty-eight hours an alkalinity of the urine. There is no reason why, with the specifics or with the alkalies, some tonic remedies cannot be employed, such as iron, quinine, or strychnine, alone or combined.

This patient improved somewhat with the administration of salicylate of sodium, but on the advent of damp weather he would have a recurrence of pain. The physiological effect of the salicylate did not persist as it should, and it was thought advisable to use the drug in large doses during a short period of time, alternating with the alkalies. The method employed is about as follows: 15 grains of the salicylate of sodium are given every two hours for eighteen hours; the succeeding day it is replaced by large doses of neutral mixture (½ ounce), and is returned to on the third day for another eighteen hours, smaller doses being given. The method thus used in this case has been most satisfactory, and the patient is much more comfortable, although the case is, from its type, subacute and protracted, and the fact that the patient has had so many previous attacks renders it most difficult to cure the disease.

As soon as the urine becomes persistently alkaline, the remedies indicated can be withdrawn and iron substituted for them. With the iron a laxative alkaline-water may be freely used.

We must recognize the influence of diet. I am confident that a well-regulated, properly chosen diet is essential to procure permanent relief. It should be used for a long time after convalescence, and be one that excludes starches and sugars, and admits of fats in moderation.

HYPERTROPHY OF THE PHARYNGEAL TONSIL.

A Clinical Lecture
delivered at the Rush Medical College,
October 30, 1890.

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Synonymes: Hypertrophy of Luschka's tonsil, adenoid growths in the vault of the pharynx.

This affection consists of an abnormal enlargement of the glandular tissue normally found in the vault of the pharynx. It is characterized by obstruction to nasal respiration, alterations in the voice, and in many cases partial deafness, with catarrhal symptoms and more or less deterioration of the general health.

It is most frequently observed in damp climates and in young children, but it is sometimes met with in young adults.

Anatomical and pathological characteristics.—The changes in the glandular tissue closely resemble those which are frequently seen in the faucial tonsil. The structure is of a grayish or pinkish hue, though sometimes of a bright-red color. The surface is never granular, but often has a lobulated appearance. Enlarged bloodvessels are not present upon the surface, as in many other abnormal growths. The growth may be either soft and friable or exceedingly firm; it consists of lymphoid tissue and an overgrowth of connective tissue similar to that found in hypertrophy of the faucial tonsil. The effect upon the general health depends upon the size and shape of the growth, and the amount of obstruction to respiration.

Etiology.—Heredity undoubtedly bears some part in the etiology of this affection, yet the disease has been understood for so short a time that it is impossible to determine whether the parents of most patients have suffered from a similar complaint. Frequently, how-

ever, several children in the same family will be found so affected. It appears to be due in the majority of cases to the same causes as enlargement of the faucial tonsils. The exanthematous diseases and diphtheria occupy a prominent place in its etiology. Frequent colds, and the strumous and rheumatic diatheses, may also be reckoned among the causes. McDonald[1] attributes the majority of cases to obstruction of the nasal passages and consequent rarefaction of the air in the naso-pharynx during inspiration. This, however, would seem to be opposed by the fact that nearly all cases of cleft palate are also affected by this disease. It certainly does not correspond with my own observation, although it is true that in a considerable number of cases anterior nasal stenosis does exist.

Symptomatology.—There is usually a history of mouth-breathing, with all its attendant symptoms, extending over several months or even years, during which time the parents have been continually disturbed at night by the loud snoring and irregular and noisy breathing of the patient. The child is usually restless and often wakes from troubled dreams during the early part of the night, but toward morning sinks into a heavy sleep from which it awakens with headache or a feeling of malaise that does not wear off for several hours. Nasal or post-nasal catarrh and partial deafness are not infrequently present, and it is common to find that these diseases have come on after diphtheria or one of the exanthematous diseases which has caused hypertrophy of the gland. The defective hearing appears to result from obstruction of the Eustachian tube, and in some cases gradual extension of the inflammation to the middle ear. The deafness is sometimes outgrown as the glands atrophy during advancing life, and it may often be cured by removal of the abnormal tissue, but if allowed to persist for a long time is likely to become permanent. The voice is thick and indistinct in proportion to the interference with nasal resonance, and it becomes impossible for the patient to pronounce the letters *m* or *n*, so that *b* is used instead of *m*, and *d* instead of *n*. In such cases the voice sounds as though the patient had a cold in the head. Shortness of breath upon exertion is often noticed, and in children who are trained to keep the mouth closed, catching or sighing respiration at intervals in order to compensate for the constant deficiency of air is frequently observed. A barking, reflex cough is sometimes present. Frequently a peculiarly disagreeable nasal secretion becomes a fixed condition, and it is often necessary for these patients to clear out the naso-pharynx by the act of hawking. Occasionally, though not in the majority of cases, a rhinorrhœa is present. The nostrils and anterior nasal cavities are found abnormally small in some cases, and in the majority the faucial tonsils are also enlarged. The uvula, pillars of the fauces, and edge of the palate are generally slightly congested, and frothy or muco-purulent secretions are found upon the pharyngeal walls, dropping from the naso-pharynx. In many cases the pharynx is relaxed and the follicles swollen, as in advanced cases of follicular pharyngitis. The follicles, which are usually paler than the surrounding mucous membrane, generally increase in size toward the upper part of the pharynx until just above the edge of the palate they become continuous with the glandular enlargement. With the rhinoscope we should especially examine the posterior pharyngeal wall, the vault of the pharynx, and the choanæ, irregularity of the upper outlines of which is among the most easily recognized signs of the disease. Upon the pharynx the growth has a clearly-defined cushion-like appearance, and is more or less nodular, but in rare instances it hangs from the vault of the pharynx in soft pendulous masses resembling condylomatous warts. In color it is usually pale pink or grayish, but it may have any shade from gray to a deep red. Its surface is never traversed by bloodvessels. In adults in whom atrophy has taken place the remains of the gland may sometimes be seen as small excrescences.

Palpation is often desirable in adults to determine the consistence of the growth, and it is nearly always essential in children, because of the difficulty of rhinoscopic examination. In performing it a gag should be placed between the teeth, and the forefinger of the right hand carried back to the pharyngeal wall and then turned upward behind the palate, where it will at once detect the abnormal growth. Those unfamiliar with the normal feeling of the part should at first search for the septum and move the tip of the finger backward and upward from both sides. Slight bleeding usually follows, though the examination is not especially painful to the patient.

Chronic pharyngitis, rhinitis, or laryngitis will be found in some cases, and occasionally deformity of the thorax will have resulted in the pyriform chest or pigeon-breast.

Diagnosis.—The affection is to be distinguished from nasal mucous polypi, and from fibroid tumors. Mucous polypi seldom occur at so early an age as does hypertrophy of the pharyngeal tonsil, are of a lighter color, semi-translucent, and usually have bloodvessels coursing across their surface. They almost universally grow from the nasal cavities instead of the naso-pharynx, and may be readily detected by anterior rhinoscopy.

Fibroid tumors are much harder than the hypertrophied glandular tissue we are now considering, are frequently attended by severe epistaxis, and upon being touched bleed easily and profusely. They are usually of a bright-red color, and bloodvessels may be seen upon their surface; when large the neighboring parts are distorted—none of these signs being observed in hypertrophy of the pharyngeal tonsil.

Prognosis.—If left to themselves it is probable that in seventy-five per cent. of the cases the gland would atrophy at about the twelfth or fourteenth year of the patient's age, but in the meantime irreparable mischief to the ear, the voice, or the general health may result. In nearly all of the remaining cases the gland would gradually diminish in size and finally disappear before middle life. When the affection has existed for a long time the hearing may be permanently impaired, but, usually, removal of the gland greatly benefits the patients. The natural voice is not always immediately restored, because a person having learned to talk with an obstruction in the naso-pharynx may require a considerable time to overcome the muscular habit, and in adults it may never be entirely remedied. The results of operative procedure, if not too long delayed, are most satisfactory.

Treatment.—Of internal remedies I have occasionally

[1] Diseases of the Nose, 1890, p. 235.

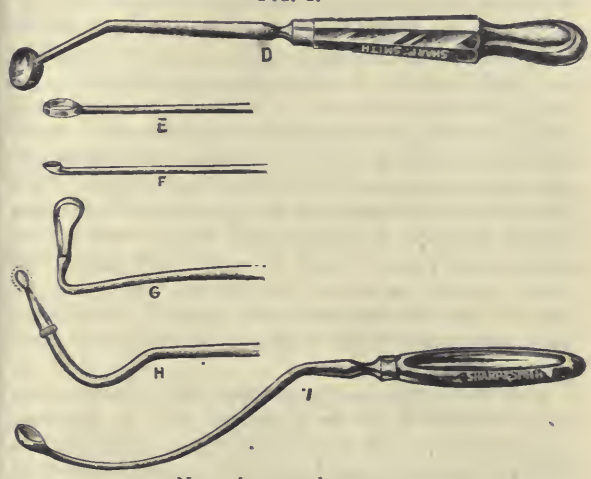
found the syrup of the iodide of iron of value, particularly in anæmic children. Other preparations of the iodides will doubtless prove beneficial in a few cases, and the chloride of calcium might cause some reduction of the gland in other instances; but, as a rule, medicinal treatment is of no value. Locally, astringents have been recommended, and seem to be useful in a few cases.

The most satisfactory results follow the removal of the gland by surgical measures. In a few cases in which the friends have objected to an operation, I have employed chromic acid successfully. In using this caustic I fuse a few crystals on the end of a flat aluminum probe, and pass this through the nostril to the enlarged pharyngeal tonsil, where it is held for two or three seconds. The nares must be previously oiled to prevent the contact of any of the acid with the mucous membrane, and a small amount of cocaine may be applied to the nares and naso-pharynx in the form of either powder or spray. Applied in this way the acid usually causes a moderate amount of pain at the time and some soreness for several hours afterward, but the pain is not severe. The applications may be repeated at intervals of from three to five days, being made alternately through the opposite nostrils. The galvano-cautery may be used by means of a bent electrode passed up behind the alate, or a straight one through the naris, but the method is painful, tedious, and not very satisfactory. Scraping off the gland by means of a long finger-nail, or by various forms of curettes (Fig. 1) is in favor with some operators, and may in certain cases serve an excellent purpose; but usually the operation is less complete than when performed by Loewenberg's forceps, and, therefore, recurrence is more likely to take place. Écrasement by means of a bent snare has been practised satisfactorily in some cases in which the growth was very soft. Some operators prefer scissor- or punch-like forceps, but both are open to objections and do not seem to me to compare with the Loewenberg forceps (Fig. 2). The scissor-like instruments which I have seen may be satisfactory for cutting out a soft portion of the mass, but they are not well adapted to a complete extirpation of the growth, and other instruments will generally have to be used if the diseased mass is completely removed. The punch-like forceps are not open to this objection, but it is claimed that much more bleeding results from their use than from the instrument about to be described. By far the most satisfactory inst rument for the operation is Loewenberg's forceps, or some of its modifications. The modification of this instrument, suggested by John N. Mackenzie, of Baltimore, has proved most satisfactory to me, though I have had made a similar instrument with shorter blades for operating upon young children; these two answer the purpose perfectly.

In performing this operation upon adults it is often sufficient to anæsthetize the parts by cocaine, which may be applied by an atomizer, syringe, or swab, or by means of a hypodermic syringe with a bent needle, by which it may be injected directly into the gland. My own custom has been to apply a ten-per-cent. solution as a spray behind the palate, and a similar solution by means of a syringe with a long nozzle to the upper part of the gland through the nares.

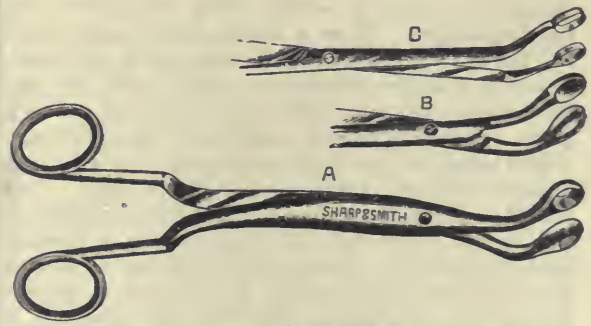
The application should be repeated about once a minute until the part is anæsthetized, or in about ten minutes. A self-retaining palate retractor should then be inserted, and the patient may depress his tongue with a depressor. The forceps are then inserted with the aid of a rhinoscopic mirror, and thus one or two bites may be made accurately, but subsequently the blood obstructs the view and the remainder of the operation may be postponed to another sitting, or completed by the sense of touch if the patient will permit. Usually, even with cocaine, after two or three bites have been made, patients prefer to postpone the remainder of the operation. Two or three sittings, however, will be sufficient in the majority of cases. When an anæsthetic is

FIG. 1.



Naso-pharyngeal curettes.

FIG. 2.



Naso-pharyngeal forceps. *A*. John N. Mackenzie's modification of Loewenberg's forceps; *B*. Loewenberg's forceps; *C*. Cutting forceps.

objected to, either in adults or children, if the gland is soft, and if for any reason a perfect operation will not be permitted, a single large bite should be made, as it will give very great relief. In children chloroform or ether should be administered, chloroform being preferable. When anæsthesia is complete the child should be turned upon its abdomen and face, with its mouth over the side of the table, and a gag should be inserted to hold the teeth apart. Henrotin's gag is the simplest one for this purpose which I have seen, but sometimes Goodwille's will be found preferable, especially in large children. The surgeon, standing at the right side of the table and facing the patient's head, passes the index finger of his left hand behind the palate into the naso-

pharynx, where it is retained as a guide to the forceps. The forceps are then passed along the dorsal aspect of the finger and accurately applied to the growth. Thus the gland is removed piece by piece, the forceps being guided each time by the finger until every part has been extirpated. Care should be taken to avoid seizing the posterior edge of the vomer or the ends of the Eustachian tubes. The latter often seem to the uneducated finger like abnormal growths. If care is taken not to turn the forceps sideways there is no danger of doing damage, providing the operator is familiar with the normal condition of the parts. Sometimes masses are situated just back of the Eustachian orifices and are liable to be overlooked, but the most common difficulty arises from small pendant masses which hang just back of the choanæ and are liable to be crowded forward into the posterior nares. It is sometimes quite difficult to get the finger in front of these in order to push them back where they may be caught with the forceps. Some operators attempt to scrape them away with the finger-nail, but the effort can be only partly successful. When I find difficulty in removing this part with the post-nasal forceps, I employ a straight nasal forceps with cutting edges, which I pass through the nostril and guide to the proper point in the vault of the pharynx with my finger, which is still retained behind the palate. In this manner a piece which might otherwise be difficult to catch is very readily removed.

With the patient in the position that I have recommended there is no necessity for care in swabbing out the throat, as the blood cannot run *up* the trachea. With the patient on his back and the head thrown far backward, as recommended by some English surgeons, it is necessary to swab out the throat and naso-pharynx frequently in order to prevent blood from getting into the air-passages. There is usually considerable bleeding, but this stops as soon as the operation is completed. However, if undue hæmorrhage should occur, the posterior nares may be packed in the usual way, or, as I prefer, with a long strip of gauze which is saturated with a thick solution of tannic and gallic acids, such as I have recommended for checking nasal hæmorrhage. This should be pushed back through the naris and packed up behind the palate with the finger, which is inserted through the mouth. The nares should also be packed and the gauze brought forward to the nostril, to prevent the packing from falling down into the throat. If it should become necessary to plug the naso-pharynx, the packing should be removed from within twelve to twenty-four hours.

When the operation is completed the mouth should be wiped out and the nostril squeezed to press out as much blood as possible, but it is neither necessary nor desirable to wash out the parts. The patient should then be placed in bed and the friends directed to keep him as much as possible upon the face till he has thoroughly recovered from the chloroform. He should be kept in bed for a few hours, and in the house for from two days to a week, according to the weather. During this time I usually direct that insufflations be made, two or three times during the day, of a powder composed of 2 per cent. of cocaine, 50 per cent. of iodol, and 48 per cent. of sugar of milk. A simple detergent alkaline spray is not objectionable, but washes should be avoided for fear of injuring the middle ear; even sprays will sometimes find their way up the Eustachian tubes, and, therefore, unless, judging from the odor, there seems to be a special indication for them, I prefer to use simply the powder.

As the result of the operation there is usually a little soreness of the parts for a day or two, but not sufficient to interfere much with swallowing. There is sometimes a slight elevation of temperature. The improvement in breathing is marked and immediate in many cases; very often the friends become alarmed during the first night, because the child breathes so quietly. In cases with deafness, considerable improvement or a cure of this symptom may be expected within a few days or weeks, but alterations of the voice are less rapidly recovered from. Some danger of otitis media exists from the liability of blood or other fluids to pass into the Eustachian tube, but thus far no permanent bad results have come from it in my experience. If the accident occurs, continuous use of hot water in the ear, or hot water with glycerin and opium, and dry heat externally, are the best remedies that can be employed. In some cases nasal obstruction will be found to persist, and it must subsequently receive appropriate treatment.

The results of this operation are the most satisfactory of any that I have seen in the domain of special surgery. In cases in which the operation is needed—and in no others should it be recommended—the patient's general condition undergoes a revolution for the better which often astonishes even the physician, and gives the friends most unbounded satisfaction. It is not unusual for a child of from three to six years of age to gain from twenty per cent. to twenty-five per cent. in weight within five or six months after the removal of the gland. I have never seen ill results follow the operation, and think it safe to tell the friends that when properly done it is no more dangerous than is the removal of a finger.

MEDICAL PROGRESS.

New Method of Dressing the Chest in Pneumonia and Pleurisy.—DR. WILLIAM HUNT (*Annals of Gynæcology and Pædiatry*, February, 1891) gives the following directions for treating the chest-walls in pneumonia and pleurisy:

If there is to be any cupping or other preliminary operation, have that attended to; then all the ingredients wanted are pure collodion and absorbent cotton in smooth layers, and a good broad brush like a mucilage brush.

Apply a very thin layer of cotton over the affected side, from spinal column to sternum, and secure it with collodion smeared thoroughly over it. Then go on with thicker layers, securing them with collodion until a good padding is obtained, paying particular attention to the edges. In double cases the dressing may encircle the chest. The advantages are:

1. The one dressing, if well applied, will last throughout the case, and hence,

2. The fatigue and discomfort of frequent poulticing are avoided.

3. The side, in unilateral cases, is held as in a splint,

while the free side does the breathing. A first-class non-conductor is covering the chest. The contracting collodion may have some influence in controlling the blood-supply.

4. There is no particular interference with physical examination, to one who has a good ear. May be it would be a good thing if there was; for, having once made the diagnosis, what is the use of exhausting the patient every day by trying to find out whether one-eighth of an inch, more or less, is involved? The general symptoms will tell that.

Prescriptions for Constipation of Pregnancy.—The following prescriptions are given by the *Revue Général de Clinique et de Therapeutique* for this condition:

℞.—Rhubarb . . . . 2½ drachms.
Boiling water . . . 4 ounces.

Make into an infusion and add carbonate of magnesium 2½ drachms, and manna 1 drachm. Order a tablespoonful of this every hour.

℞.—Phosphate of sodium . . 6 drachms.
Distilled water . . . 4 ounces.
Syrup of raspberry . . 6 drachms.

A dessertspoonful of this may be given every half hour or hour.

Finally, if acidity of the stomach exists, the following may be given:

℞.—Calcined magnesium . 2½ drachms.
Manna . . . . 1 drachm.
Distilled water . . . 8 ounces.

A tablespoonful every hour until a purgative effect is produced.

Cantharidal Collodion.—The following method of preparing cantharidal collodion is noted by the *Revue General de Clinique et de Therapeutique:*

℞.—Cantharidin . . . 15 grains.
Castor oil . . . . 1½ ounces.
Acetone . . . . 1½ "
Tincture of cannabis indica 2½ drachms.
Collodion . . . . 1½ pints.

The cantharidin is to be powdered and dissolved in the castor oil with the aid of heat. After it is cooled the acetone and the collodion, and finally the tincture of cannabis indica, are to be added.

Anæsthetic Mixtures.—The following formulæ for the preparation of the anæsthetic mixtures, are given in the *Medicinische-chirurgische Rundschau.* The A. C. E. mixture, according to this journal, is made by taking:

℞.—Alcohol . . . . . 1 part.
Chloroform . . . . . 2 parts.
Ether . . . . . 3 "

Another method of making it is to use:

℞.—Alcohol and ether . . . 1 part.
Chloroform . . . . . 3 parts.

With some the anæsthetic mixture is made by adding 4 parts of chloroform to 1 part of alcohol.

Powder for Acute Eczema.—*La Semaine Médical* gives the following prescription of Alexinski for this condition:

℞.—Oxide of zinc . . . 15 grains.
Subnitrate of bismuth . 30 "
Powdered starch . . . 1½ drachms.
Powdered lycopodium . 1½ "

This powder is to be dusted over the parts which are affected, night and morning.

Aristol for Fissured Nipples.—Vinay, in *Lyon Médical,* has recommended the employment of aristol in the treatment of fissured nipples occurring during lactation. He uses it in cases in which there is much ulceration and pain. The mixture is as follows:

℞.—Aristol . . . . . 1 drachm.
Liquid vaseline . . . . 5 drachms.

This is to be applied to the breast and carefully wiped off before the child nurses. After its employment the pain diminishes and cicatrization goes on rapidly. In cases in which the glands become much involved this preparation of aristol may be rubbed into the enlargements with advantage.

Cystitis in Women.—The *Journal de Médecine de Paris* gives the following prescription for cystitis in women:

℞.—Citrate of potassium . . . . ½ ounce.
Fluid extract of triticum repens } of each 1 "
Tincture of belladonna }
Fluid extract of buchu . . . ½ "
Water, a sufficient quantity to make 4 ounces.

A teaspoonful in a wineglassful of water three times a day.

Treatment of Diphtheria by Mercurial Inunctions.—In *La Semaine Médical* Smakovski states that he has employed frictions of mercurial ointment in a number of cases of diphtheria with great success. The inunctions are continued until marked evidences of mercurialism are present, and it may even be necessary to use a mouth-wash of chlorate of potassium in order to prevent salivation. This treatment, of course, is identical in its effects with the exceedingly common method of using calomel or bichloride of mercury in this disease for the purpose of decreasing the quantity of the plastic exudate.

The Treatment of Metrorrhagia in Childbed.—Braun states that in cases of metrorrhagia occurring within sixty hours of parturition it is necessary that we should determine the condition of the uterus. If it is not firmly contracted energetic pressure should be made at once upon the fundus, and all clots removed from the vagina by the finger. If the hæmorrhage persists and continues after pressure upon the uterus, it is well to introduce a piece of ice into the vagina. If grave symptoms arise from the hæmorrhage, 1 or 2 drachms of fluid extract of ergot with 20 drops of the tincture of nux vomica may be given, and repeated in half an hour if the uterus has not contracted. Cold should be applied to the belly and used by vaginal injections. Internally it may be well to administer rum or strong wines. — *L'Union Médical.*

CURRENT LITERATURE.

SATURDAY, MARCH 21, 1891.

THE SUSPENSION TREATMENT IN LOCOMOTOR ATAXIA AND OTHER NERVOUS DISEASES.

JULIUS HESS gives a very thorough review of the suspension treatment and its literature, from 1883, when it was incidentally discovered by Motschukowsky, to the present. He, himself, has employed the treatment in eighteen cases; five of these were cases of locomotor ataxia, and eight of neurasthenia, the remaining five consisting of one case each of old neuralgia, spinal muscular atrophy, gastralgia, hypochondria, and cerebral syphilis. Three hundred suspensions were given, one patient, who had locomotor ataxia, receiving as many as eighty. The duration of the suspension at first was from one-half to one minute, and later, four minutes. Some patients were suspended every day, others every other day, and still others at irregular intervals. Pretty full abstracts of his cases are given. The patients affected with locomotor ataxia were not improved, or at least only temporarily. In the majority of the cases of neurasthenia no result was obtained. The remaining patients were either only improved transiently or were made worse. Hess admits that the experience of others has, for the most part, been more favorable, and that other methods have no better effect upon progressive locomotor ataxia. The method of suspension is convenient and time-saving, and, in the hands of a physician who chooses his cases properly and has suitable apparatus, it is not dangerous.—*Berliner klinische Wochenschrift*, February 2 and 9, 1891.

TREATMENT OF PNEUMONIA WITH LARGE DOSES OF DIGITALIS.

PROFESSOR Z. PETRESCO, of Bucharest, delivered a lecture on this subject before the Section of Internal Medicine at the last International Medical Congress. He refers to his previous remarks and to the writings of a number of others on the same subject. He uses an infusion of 60 grains of digitalis leaves to six ounces of distilled water, to which about an ounce of syrup of orange-peel is added. The digitalis is allowed to steep for a half-hour. A tablespoonful of this mixture is given every half-hour. Petresco says that doses of this size are well borne, and that he has never met with a case of poisoning, his results differing in this respect from those of other physicians. He maintains that these doses are therapeutic, not toxic, and that the absence of toxic symptoms is not due to the use of an inferior digitalis leaf. Satisfactory proof of the latter statement is furnished by giving the sources of the supply and analyses showing the strength of the leaves. Digitalis leaves infused for fifteen minutes yield to the water digitonin, digitalein, and digitalin; digitoxin does not pass into this infusion. The urine of twenty-three patients was examined, both during and seven days after treatment, and only digitalein could be detected.

The best results were obtained in fibrinous or croupous pneumonia. The results in infectious pneumonia are explained principally by the hyperkinetic, antipyretic, and antiphlogistic action of digitalis; in such cases it was used together with antiseptics. Digitalis has also been very useful in pneumonias complicated with bronchitis and pleurisy, and especially in cases associated with heart disease. Petresco declares that he has observed cases of true croupous pneumonia undoubtedly aborted by digitalis used in the way he describes. In from twenty-four to forty-eight hours, the time necessary for the development of the action of digitalis, a sudden fall of temperature from 102°, 104°, or even 106°, to 98.4°, 97°, or even 95°, has been observed. This fall of temperature was accompanied by a corresponding decrease in the frequency of the pulse and respiration, and by the usual symptoms of convalescence.

No effect upon the digestive tract was observed, except the occasional production of vomiting, which occurred especially in apical pneumonias.

The greatest and most persistent changes were noticed in the pulse, which became slow, powerful, and of high tension. Irregularity or intermittency of the pulse were never observed. A number of sphygmograms are reproduced, showing the transformation of a frequent, weak, often dicrotic pulse, of large volume, into a slow, strong, small pulse, of high tension. Petresco does not regard digitalis as a diuretic, because it exerts no direct action upon the kidneys. In dropsy of cardiac origin digitalis produces an increased flow of urine by improving the general condition of the patient. Petresco has treated pneumonia according to the expectant plan, with emetics, alcohol, bromide of potassium, caffeine, strophanthus, and convallaria, and he compares the results obtained in these cases with the results obtained by the use of large doses of digitalis. His conclusion is that the latter plan possesses decided superiority. He also quotes statistics from Jaccoud showing the mortality attending the treatment of pneumonia by bloodletting, tartar emetic, and alcohol, and that attending the expectant plan of treatment. The highest mortality (34.50 per cent. in 698 cases) occurred under employment of bloodletting, and the lowest (3 per cent. in 129 cases) under the use of tonics, alcohol, etc. In contrast with these, Petresco places the mortality statistics at the *Central Militärlazareths*, in Bucharest, which are as follows: From 1883 to July 1, 1887, there were 577 cases with a mortality of 1.21 per cent.; to January 1, 1889, 816 cases, with a mortality of 2.06 per cent.; and up to the time of his report there had been 825 cases, with a mortality of 2.06 per cent.

His general conclusions are as follows:

1. Digitalis has a direct antiphlogistic action only in therapeutic doses.

2. The specific therapeutic dose is from 60 to 120 grains of the leaves, given as an infusion, within twenty-four hours.

3. This dose may be continued from two to four days according to the severity of the cases treated.

Patients have received in the course of their disease from 300 to 360 grains in four or five days, without symptoms of nausea or poisoning. The temperature fell from one to three degrees after single doses, and five or six degrees after two or three doses. The pulse fell from 40 to 60 beats after several doses. This reduction of the frequency of the pulse and of the temperature lasts ten or twelve days, and then they gradually become normal.

4. Disappearance of all local symptoms of the pneumonia is observed simultaneously with the improvement in the circulation and respiration.

5. The effectiveness of the treatment is confirmed by the statistics, the mortality being least under large doses of digitalis.

6. The applicability and harmlessness of the therapeutic dose are incontrovertibly proved by cases reported in full by Petresco's pupils—Brailov, Sacliano, Antoniu, and Constantinesco.

7. Comparative study of the various methods of treatment of pneumonia has persuaded Petresco that the expectant plan is not only irrational, but even dangerous. The supposition that pneumonia must run its course is not justified. Pneumonia may be aborted, especially if attacked at the beginning.—*Therapeutische Monatshefte*, February, 1891.

DIFFERENTIAL DIAGNOSIS BETWEEN ULCER AND CANCER OF THE STOMACH.

Kollmar says that in the great majority of cases the diagnosis between ulcer and cancer of the stomach is easily made, but that in not rare cases it may be difficult. In some cases the course of ulcer of the stomach is without striking symptoms, and the disease is perhaps first discovered at the autopsy, or makes its presence known by sudden profuse hæmatemesis or by a perforative peritonitis. Cancer of the stomach may also exceptionally exist without peculiar characteristic symptoms, the only symptoms being a steadily progressing marasmus and profound cachexia, without any other recognizable cause. Usually, however, pronounced digestive disturbances, pain in the region of the stomach, and vomiting, with or without admixture of blood, point with certainty to serious disease of the stomach; but whether it is ulcer or cancer must be determined by other considerations.

The points to be considered in the differential diagnosis of the two diseases are, the age of the patient, the character of the pain, the character of the bleeding, the degree of acidity of the gastric juice, the duration of the disease, the condition of the nutrition of the patient, and the presence or absence in the gastric region of a palpable tumor.

As regards age, gastric ulcer is most frequent between the ages of fifteen and twenty years; but it is not rare in old persons. Cancer of the stomach is most frequent between the fortieth and sixtieth years of life, eighty-two of Kollmar's one hundred and eighteen cases occurring during this period. Kollmar's statistics of one hundred and eighteen cases of cancer seen in the last twenty years at the medical clinic at Tübingen, give an average age of fifty years.

Localized pains, "wound pains," are characteristic of gastric ulcer, but they are not present in all cases, and are found in gastric cancer in the stage of ulceration. Diffuse pains, dyspeptic discomfort, and cardialgia, are common to both diseases. The pain in gastric cancer is usually less intense than that in gastric ulcer.

Hæmatemesis varies greatly in character and quantity in both, but generally profuse hæmorrhages are more frequent in ulcer.

Absence of hydrochloric acid from the gastric juice is not an absolutely certain sign of the presence of cancer. A negative reaction is obtained in some cases of amyloid degeneration of the gastric mucous membrane, in cancer of the duodenum and œsophagus, and in poisoning with acids; and the reaction is frequently negative in gastric catarrh, in atrophy of the gastric mucous membrane, and in persistent fever. A temporary absence is not rare in gastric catarrh and dilatation of the stomach. In the latter diseases the reaction may be obtained by repeatedly washing out the stomach. Kollmar reports a case of this kind. A decidedly positive reaction speaks with considerable but not absolute certainty against the diagnosis of gastric cancer; while a negative reaction, because it occurs in other diseases of the stomach, should at least not be regarded as characteristic of cancer.

The duration of the disease is of great importance in the diagnosis. Gastric ulcer runs a very chronic course, frequently lasting years; it may get well and subsequently recur. The course of gastric cancer is different, as it is very exceptional for it to last longer than two years, and usually death occurs much sooner. A preceding history of stomach trouble lasting for years, getting well for a time and then relapsing, is against the diagnosis of cancer even in old persons.

Cancer sometimes, but very rarely develops in the scar of an old ulcer. Kollmar has been able to find only fourteen cases of this kind reported in the literature upon the subject. Details of cases by Dittrich, Meyer, Lebert, Heitler, Platow, Rosenheim, and Kulcke are given. It is not reasonable, therefore, to pay too much attention to these exceptional cases in the diagnosis. Both ulcer and cancer may both be present in one patient.

An important diagnostic point is the condition of the patient's nutrition. Great and early emaciation and cachexia occur in the great majority of cases of gastric cancer, whereas in ulcer the nutrition is often relatively good. But when the ulcer has persisted a long time, and the stomach has become dilated, and frequent vomiting and hæmorrhages occur, the picture of the disease is very much like that of cancer.

A sign, surpassing all others in diagnostic importance, is a palpable tumor in the stomach region, which is almost always present in cases of cancer. It may be simulated by scar tissue about an ulcer, by a sacculated peritoneal exudate, by an hypertrophied pylorus, or by a tumor of a neighboring organ. In such cases watching for the growth of the tumor leads to a correct decision, though in some cases increasing atrophy of the abdominal

walls, by making the tumor more readily palpable, has made it appear to grow larger. Reinhard has collected sixteen cases of simple ulcer of the stomach with tumors. In six cases the tumor was caused by an hypertrophied pylorus from cicatricial stenosis; in six it was the result of adhesions between the stomach and other organs, caused by the ulcer, and in part also by encroachment of the ulcer itself upon these organs; in three cases there were foreign bodies in the ulcer; and in one case an encapsulated abscess. All the sixteen patients were of an age at which cancers are common; thirteen were women and three men. A tumor of the head of the pancreas may lead to error. In such cases as Reinhard's, the duration of the disease is a great aid in the diagnosis.

Kollmar concludes his paper by reporting three interesting cases. In the first case, a woman forty-eight years old had suffered from gastric ulcer for thirteen years. Subsequently a marked tumor and severe cachexia appeared, so that it was supposed that a cancer had developed. The autopsy revealed a gastric ulcer, but no cancer was found. The second case was that of a woman forty-six years old who had had disease of the stomach for twenty-three years. A diagnosis of gastric ulcer was made in spite of the presence of the gravest cachexia, a decided tumor, and the absence of hydrochloric acid in the gastric contents. This diagnosis was confirmed by the autopsy. In the third case, a woman fifty-three years old, with the gravest anæmia and cachexia, had had disease of the stomach for a great many years. The diagnosis was gastric ulcer without carcinoma, and was confirmed by autopsy.—*Berliner klin. Wochenschrift*, February 2 and 9, 1891.

MERCURIAL STOMATITIS.

IN writing upon the subject of mercurial stomatitis FOURNIER[1] claims that every time that mercury is administered it is at the risk of developing stomatitis. All the mercurial compounds, however, are not equally dangerous in this respect, and the mode of administration also has a bearing upon the production of stomatitis. The administration of mercury by inunctions is the mode which predisposes most markedly to this complication. If properly made—that is, not extending the application over a longer space of time than ten minutes, or using a larger amount than one drachm—inunctions are generally well borne; notwithstanding, it is necessary to watch the gums. If used in larger amounts than one drachm, even one and a half drachms *per diem*, salivation is apt to occur. This stomatitis is abrupt in appearance, and is more intense at first than that which follows the administration of the drug by the mouth. Fournier claims that the hypodermic injection of mercury, which was formerly believed to be free from the danger of producing salivation, is usually followed by disastrous effects within a few days.

There are certain conditions favoring the appearance of stomatitis during the administration of any of the preparations of mercury. Among these are *idiosyncrasy* and *a bad state of the mouth*, with a tendency to stomatitis. It is wise, therefore, to inquire into the history of the patient as to any susceptibility to mercury, and, in all cases, to make an examination of the mouth. The presence of the teeth is also a factor in the production of a stomatitis of this kind. Salivation never occurs in the newborn, nor does it occur in toothless old people. Workers in mercury mines suffer from frightful attacks of stomatitis until they lose their teeth, after which they have no further trouble. Sex, also, has a peculiar influence, women being much more susceptible than men to the effects of the drug. Denudation of the skin is a marked predisposing cause, and the dressing of vulvar mucous patches with a mercurial pomade has frequently resulted in an inflammation of the mouth. The genital surfaces are especially sensitive to the action of mercury, and a single inunction upon the scrotum may determine a stomatitis.

[1] La Médecine Moderne, January 15, 1891.

CANCER OF THE PANCREAS.

N. MUSMECI, in a paper entitled "A Contribution to the Pathology of Cancer of the Pancreas," says that it is often impossible to determine clearly cancerous degeneration. The rarity of this alteration in an organ the functions of which are so poorly understood, and which is in such close proximity to the stomach, the liver, the intestines, and other organs, renders a diagnosis with absolute precision most difficult. Musmeci, with great clearness, has drawn from his studies the following conclusions:

1. The diagnosis of cancer of the pancreas, in the majority of cases, is difficult; it frequently happens that the disease is confounded with neoplasms of other organs.

2. Diagnosis by exclusion is the best method in diseases of this organ in general, and in carcinoma in particular.

3. Jaundice in the beginning of the sickness, the presence of a tumor which corresponds in its location to the pancreas, the presence of fatty material in the fæces and of sugar in the urine, have a considerable supposititious force in the diagnosis of a cancerous affection.

4 The vicinity of the pancreas to the principal abdominal organs increases the liability of the transmission of the cancerous germs from one organ to another in the great majority of cases, and there is no method of ascertaining whether the alteration began in the pancreas, liver, stomach, or other abdominal viscera.—*Gazetta degli Ospitali*, Nos. 82 and 83.

NATURE, ETIOLOGY, AND TREATMENT OF SCROFULA.

SCROFULA was considered for a long time as a disease (Lugol) with a prodromal period which was designated the "scrofulous habitus." The course of the disease was divided into four periods: The first was characterized by the appearance of eczema, impetigo, nephritis, chronic coryza, otorrhœa, en-

larged tonsils, and acute suppurating adenitis. The distinguishing characteristics of the second stage were various affections of the skin and mucous membranes, followed by exuberant ulcers, and chronic suppurating cervical adenitis, leaving fistulæ and depressed cicatrices. In the third period were grouped cold abscesses, glandular enlargements, periostitis, hyperostoses, caries, necrosis, and "white swellings." The fourth period comprised diseases of the viscera, bronchial, pulmonary, and pleural tuberculosis, scrofulous lesions of the prostate, bladder, kidneys, testicles, ovaries, vertebræ, and brain, together with amyloid degenerations.

This theory has been entirely abandoned, owing to the advance in bacteriology and pathology during the past thirty years. To-day we recognize the scrofulous diathesis, a condition which predisposes to certain affections, such as the dermatoses and catarrh of different organs, which, however, are not specific, as was formerly believed. These different diseases do not at first present anything peculiar in their symptoms and development, but at length it will be noticed that their progress is not as frank as it should be, the inflamed parts become hypertrophied and tumefied, resolution not being complete. The disease has a tendency to become chronic, in which state the least cause gives rise to a subacute condition. There is thus established a predisposition which renders more easy the development of scrofulous diseases, catarrhs, inflammations of the skin and mucous membranes, which, by their repetition and chronic tendency, produce the so-called "scrofulous habitus." Associated with this diathesis there is thickening of the upper lip and alæ of the nose. There is, however, nothing specific in this condition. As to the causes of this diathesis: First, it is hereditary in the full meaning of this term—a scrofulous parent transmits the disease to his child. Second, the general condition of the parents at the time of the procreation of the child exerts an influence upon the nature of its tissues and their future nutrition. An aged, sick, or syphilitic father may engender a scrofulous child, while sickness, persistent vomiting, or hæmorrhages in the mother during gestation may have the same influence upon her offspring.

Again, the scrofulous diathesis may be acquired during the first months of a child's life, through bad hygiene or sickness. It may also be induced by an artificial or incomplete lactation, either because the nurse is too old or the milk too poor, or too rich in fats. Premature feeding of a child with coarse foods, and the gastro-intestinal diseases which result from it, with their attendant symptoms of vomiting, diarrhœa, acid fermentation, and intestinal or gastric dilatation, may also induce scrofula. An interesting fact, and one which is undeniable, is the close relation existing between joint affections and scrofula. The children of gouty and diabetic people, the most typical arthritics, are often scrofulous. These children are greatly predisposed during their first years to the same diseases as are the children of scrofulous people.

As regards treatment, it is necessary to improve the nutrition, and to favor tissue change. The hygiene of the mother should be looked after during pregnancy, a good nurse should be provided for the baby, and its feeding carefully attended to. Later, the baby's food should be selected with reference to the proportion of proteids and fats. The function of the skin may be maintained by dry frictions, salt and sulphur baths during the winter, and cold baths or douches during the summer. Sunlight, exercise in the open air, alternate sojourns upon the plains and in the mountains, avoidance of damp climates, and abstinence from alcoholic as well as stimulating drinks like coffee and tea, are essential in the treatment.

The drugs to be employed are the iodides, iodoform, arsenic, iron, and tannin, which should be used alternately.—Gendre, in *Journal des Maladies Cutanées*, December, 1890.

TREATMENT OF CYSTITIS IN WOMEN.

According to Gaubet (*Archives de Tocologie et de Gynécologie*, January, 1891), the treatment of cystitis in the woman comprises: 1. Urinary antisepsis; 2. Medical treatment; 3. Medico-surgical treatment; and lastly, true surgical procedures. An antiseptic condition of the urine is best produced by the administration of salol, which, under several experienced observers, has given excellent results. The borate of sodium, according to Terrier, has given rise to gastric troubles, while the benzoate of sodium and benzoic acid have been proven to be inefficient in producing the desired effect. Bazy having tried salol, found that the drug is very well borne, even by the most delicate and rebellious stomachs, in doses of one and a half drachms, although one-half to one drachm is generally sufficient. This occasionally, not always, causes a diminution in the pain and smarting during micturition. The elimination occurs generally on the first day, but may be delayed twenty-four hours, and it may continue during one or two days, and even more, after the stoppage of the drug. The cases in which salol acts most efficaciously are the purulent catarrhs of the bladder, and in such cases it should be given in doses of from fifteen to thirty grains. Salol does not act, however, to any appreciable degree upon suppurations of the urinary passages.

Antisepsis of the urinary passages, finally, is completed by observing perfect antiseptic measures in regard to the instruments which are used. Boiling water is generally sufficient to disinfect all metallic instruments. Should the bladder require washing out, it should be done with sterilized instruments; and the fluid used should be a solution of boric acid or of dilute silver nitrate. In patients in whom the entire organism has become infected, it is necessary to prevent the infection from becoming aggravated by suppressing the cause as far as is possible. This requires a careful investigation into the condition of the bladder, the ureters and the kidneys. Secondly, elimination of the poison by the natural emunctories should be facilitated; by the skin, through the aid of sudorifics; by the kidneys, by means of revulsives over the lumbar region and large quantities

of diluent drinks. It is also necessary to destroy the poison in the system by means of quinine, and to increase the resisting powers of the patient by the use of tonics. To repeat, antisepsis of the urinary passages comprises the administration of salol in half-drachm doses daily for two or three days before the operation, intra-vesical douches of boric-acid water (3 parts to 100), and the disinfection of the instruments employed.

The medical treatment of cystitis includes primarily injections of morphia. Barley-water, linseed tea, and other diuretics will calm the pains attendant upon micturition, by freeing the urine from its irritating properties. The mineral waters have little action in the treatment of painful cystitis. Rest is an important element in the management of these cases. Opium, chloral, bromide of potassium, and belladonna should be given for the pain, and purgatives and enemata for the relief of the constipation.

SOCIETY PROCEEDINGS.

PHILADELPHIA ACADEMY OF SURGERY.

Stated Meeting, February 2, 1891.

THE PRESIDENT, WILLIAM HUNT, M.D., IN THE CHAIR.

DR. THOMAS G. MORTON reported

THREE CASES ILLUSTRATING THE RESULT OF TREATMENT OF EQUINO-VARUS.

The speaker said that the cases illustrated those forms of equino-varus which he has designated as "complicated" and "uncomplicated" equino varus. In the complicated equino-varus the foot cannot be brought to a right-angle with the leg, because the astragalus is displaced forward and more or less rotated, and in this position forms a wedge in front of the joint and so prevents flexion of the foot; in all such cases the displaced bone must be removed. In "uncomplicated" equino-varus the tarsus is almost or quite normal, the distortion resulting from contraction of the soft parts. In these cases massage, traction, and tenotomy will overcome deformity, after which the child is able to walk with the aid of appropriate apparatus.

CASE I.—Emory W., aged four years, was brought from Bedford County, Pa., to the Orthopædic Hospital, November 11, 1890, with very marked deformity and great rigidity of both feet. General tenotomy had been performed during the patient's infancy without benefit. On examination the equino-varus was found to be of the complicated variety—displacement forward with rotation of the astragalus. There was considerable atrophy of both extremities. The astragalus of each foot was excised on November 18th. The tendo Achillis and flexor tendons of the toe were divided. No vessel required ligation. Catgut was used for drainage. Right-angled tin splints and the usual dressings were employed. Walking-shoes were applied January 13th, and on January 25th his feet were in excellent position and he walked well.

CASE II.—Harry Z., aged three years, was admitted to the Orthopædic Hospital, January 15, 1891, with marked double equino-varus. Tenotomy had been performed in infancy. Examination showed no displacement of the astragalus, the distortion being entirely due to contraction of the soft parts of the feet.

General tenotomy was performed January 22d, the anterior and posterior tibial tendons, the flexor tendons of the toes, and the tendo Achillis of each foot being cut. The feet were placed in right-angled posterior tin splints, and the dressing allowed to remain undisturbed for two weeks, when the wounds were found completely healed. The club-foot walking-shoes were applied at this time and gave satisfactory results.

CASE III.—Annie S., aged eleven years, was admitted to the Orthopædic Hospital, November 29, 1890, with talipes equino-varus of the left foot. Tenotomy had been performed in early infancy without benefit.

On examination the tarsus was found normal, the distortion being due entirely to contraction of the soft parts.

On December 4th the tendo Achillis was divided and the foot readily brought to a right-angle with the leg. The varus was then overcome, and after section of the anterior and posterior tibial tendons the foot was spread out, after which all of the flexor tendons of the toes were divided. A right-angle tin splint and the usual dressings were applied to the foot. The position of the foot was excellent. An ordinary walking-shoe was applied January 15th.

DR. J. H. PACKARD said in discussion: "I desire to mention in this connection a case of talipes under my care at the Pennsylvania hospital. The patient is a Russian Jew, about twenty-five years of age. The distortion was so great that he was compelled to walk on the back of his foot. I did the operation described by Dr. Morton, dividing subcutaneously the tendo Achillis and the tendon of the anterior and posterior tibial muscles and removing the astragalus. The plantar fascia and all the flexor tendons of the toes were also severed. The foot is now in a much better position. One point to which I would call special attention is that the foot is now set further forward on the leg than normally. Instead of the weight of the body coming on the arch, it will come on the posterior abutment of the arch. There will be no spring to the gait, and the man will walk as if he had a flat foot. I do not know whether it would have been possible to avoid this condition in the treatment. The improvement in the appearance of the foot is marked, and the gait will probably be equally improved."

DR. H. AUGUSTUS WILSON said: "I hoped to have a case here this evening which I think is a proper one for the operation advocated by Dr. Morton. There are, however, in this case unfortunately several serious complications, such as spina bifida, complete sensory paralysis of one side and partial on the other, with sloughing bursitis of both feet. It has been almost impossible to stop the suppuration in the bursæ. An incision which was made six weeks ago in the foot where the anæsthesia was most marked, as yet shows no tendency to heal. It seems probable, therefore, that any extensive operation would be followed by slow healing. The spina bifida is gradually diminishing in size, being now only half as large as it was six months ago. I hope that someone can inform me as to the possibili-

ties of an open wound in a part where there is such profound anæsthesia."

Dr. Thomas G. Morton said that "occasionally we find in adults severe and painful distortion of the foot with atrophy where the usual operative measures cannot be considered, and amputation is the only resource.

"A young woman, aged twenty-six years, with a congenital equino-varus of the right foot, was admitted to the Orthopædic Hospital last December. The limb was greatly atrophied, the circulation was very defective, and three toes had sloughed off at different times, apparently from very trivial injuries. The patient had great difficulty in walking, was very lame, and suffered much pain.

"Under the circumstances, I considered an operation to correct the deformity unjustifiable. A Teale amputation was performed, being followed by slow union of the flaps, but no suppuration."

Dr. J. H. Packard then showed specimens of

SEPARATION OF THE EPIPHYSIS OF THE FEMUR,

taken from a boy nine years of age who was brought to St. Joseph's Hospital in April, 1889, having had his leg caught in the wheel of a carriage behind which he was clinging. At first sight the appearance was that of a luxation of the knee. A closer examination, however, showed an oblique wound across the posterior part of the knee-joint, the diaphysis of the femur, stripped of its periosteum, presenting. The epiphysis was turned over on top of the diaphysis and held in that position by the heads of the tense gastrocnemius muscle. The patella was not materially displaced, being still in relation with the joint, but was tilted up by the action of the quadriceps muscle. The vessels had not been torn, but had slipped around the end of the diaphysis, the blood in the artery being coagulated, so that there was a probability of the limb becoming gangrenous. The damage to the soft parts was so extensive that an attempt to save the limb was not considered proper. Amputation was therefore performed, about an inch and a half of the shaft being removed. The boy made a perfect recovery.

There are several interesting points in connection with separations of the epiphysis of the femur. In the first place this epiphysis is unlike all the others in regard to the mechanical disadvantage at which it is placed. The speaker has collected sixty-eight cases of this injury. There is often a tearing-off of a small portion of the diaphysis. In the case just described there is an extremely small portion of the diaphysis torn from the inner side of the shaft, which does not, however, alter the character of the injury. Separation of the epiphysis is not at all analogous to fracture of the femur, although it might simulate a fracture in cases in which there is a separation of a large splinter of bone. This might resemble fracture low down in the femur. In a fracture of this kind there is crepitus. The deformity is easily reduced and does not recur, but in cases of separation of the diaphysis there is no crepitus, because there is no contact between the separated portions of bone. In almost all, even the simple cases that have required operation, or when an examination has been made shortly after the accident, the periosteum has been found stripped from the surface of the shaft. The reason for this is plain. During extreme extension the epiphysis is strongly held by the ligaments; then when separation occurs there is violent thrusting downward of the diaphysis through a sort of button-hole in the periosteum, which is thus stripped off. In one case the periosteum is said to have been torn off as high as the trochanter. A distinguished French surgeon advises in these cases that the shaft of the femur be resected to a point as high as the separation of the periosteum. If this were carried as high as the trochanter, it would of course make the limb useless. If reduction is possible, the periosteum soon becomes re-adherent, and the nutrition of the bone is not materially interfered with.

Amputation has been done in twenty-eight of the sixty-eight cases reported. In a number of cases there were other injuries causing death in a short time, and in many others the diagnosis was not satisfactorily established. The speaker thought this was the twenty-seventh instance in which the accident was produced by catching the leg in a carriage-wheel. One case was recently reported by Owings in the *New York Medical Journal* in which amputation was not required. The difficulty in reducing the epiphysis, due to the contraction of the heads of the gastrocnemius, could be relieved by dividing the heads of the muscle. Whether the case would do well with a large open wound and section of the muscle, he could not say. In this case there certainly would have been difficulty in keeping the bone in position without resection.

In discussion Dr. John H. Brinton said that he had a specimen almost identical with that shown by Dr. Packard. The accident occurred in 1881 in the practice of Dr. Davison, of Bradford County, Pa. In the paper describing the case is the following account: "The patient was a boy twelve years of age, who, while riding on the back of a rapidly-moving wagon, caught his left foot between the spokes of the wheel. The foot was then carried to the front of the hub, and the popliteal region was violently strained between the sharp edge of the hub, the axle-shoulder, and the under cross-brace of the wagon. The patient was seen a few hours after the accident. There was an oblique wound, four or five inches long, extending across the upper part of the popliteal space; the skin, superficial fascia, and muscles were severely lacerated, and there was copious hæmorrhage, supposed at the time to be venous. The wound was dressed and the parts brought together by sutures. The diagnosis was obscure; there was vague crepitus, and the accident was believed to be a fracture of the femur near and perhaps into the knee-joint. On the following day the limb was cold, and there was still no pulsation in the artery. In four days gangrene set in, and the limb was amputated three or four inches above the knee-joint. Careful dissection showed that the epiphysis had been completely torn from the diaphysis, and the popliteal artery was injured so that a probe could with difficulty be passed through. There was also a rupture in the posterior portion of the synovial membrane of the knee-joint. The patient made a good recovery."

NEWS ITEMS.

Illinois State Board of Health.—The Illinois State Board of Health has decided that hereafter it will recognize no foreign diploma that does not confer the right to practise medicine in the country in which it was granted. The holder of an Austrian, a German, Russian, or Swiss

diploma, wishing to practise in Illinois, must hereafter pass an examination before the State Board, unless he has passed the State examination of the country from which he comes. The holder of a Canadian diploma, unless a licentiate of the Colleges of Physicians and Surgeons of Ontario and Quebec, must pass an examination before the Illinois Board in order to practise in Illinois.

Hypnotism in Public Forbidden.—The first official suppression of a public hypnotic entertainment in this country occurred at Cincinnati, where the Health Commissioner, Dr. J. W. Prendergast, advised the licensing authorities of that city that hypnotic exhibitions should be forbidden. Dr. Prendergast takes the ground that the indiscriminate application of hypnotism is in a large proportion of cases injurious to the mental health of the subjects. The Common Council has interdicted these exhibitions, and adopted an ordinance making them a misdemeanor.

Congress of Hygiene and Demography.—The aim of the Congress is to awaken public interest in the progress of hygiene and demography—by the latter term being understood the study of the life conditions of communities from a statistical point of view; to afford persons interested in these subjects an opportunity of meeting one another, with the object of advancing their progress; and, by conferences and debates, to elucidate questions relating to hygiene, demography, and public health.

The Congress will be held in London, August 10 to 17, 1891.

The Governments of all countries, municipalities, county councils, and other provincial administrations, public health authorities, universities, colleges, and all societies which are occupied in the study of the sciences more or less immediately connected with hygiene, are invited to coöperate and appoint delegates to represent them at the Congress. An exhibition of articles of hygienic interest will be held in connection with the Congress. Excursions will be arranged to various places of especial interest to hygienists.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM MARCH 8 TO MARCH 16, 1891.

By direction of the Acting Secretary of War, WILLIAM C. SHANNON, *Captain and Assistant Surgeon*, now on duty at Fort Apache, Arizona Territory, will repair to this city and report in person to the Adjutant-General of the Army for further orders.—Par. 3, *S. O. 55, A. G. O., Washington*, March 11, 1891.

By direction of the Acting Secretary of War, HENRY I. RAYMOND, *Captain and Assistant Surgeon*, is relieved from duty at Newport Barracks, Kentucky, and assigned to duty at Fort Thomas, Kentucky, reporting in person to the commanding officer Fort Thomas, and by letter to the commanding general Division of the Atlantic.—Par. 18, *S. O. 54, A. G. O., Washington*, March 10, 1891.

FINLEY, JAMES A., *Captain and Assistant Surgeon*, having been found, by an Army retiring board, incapacitated for active service, on account of disability which is not the result of any incident of service, is, by direction of the President, wholly retired from the service this date, under the provisions of Sections 1252 and 1275, Revised Statutes, and his name will be henceforward omitted from the Army Register.—Par. 2, *S. O. 54, A. G. O., Washington*, March 10, 1891.

By direction of the Secretary of War, a Board of Medical Officers, to consist of EDWARD P. VOLLUM, *Colonel and Chief Medical Purveyor*; DALLAS BACHE, *Lieutenant-Colonel and Surgeon*; ALFRED C. GIRARD, *Major and Surgeon*; and CHARLES M. GANDY, *Captain and Assistant Surgeon*, is constituted to meet in New York City, on March 16, 1891, or as soon thereafter as practicable, for the examination of candidates for admission into the Medical Corps of the Army, and such other business as the Surgeon-General may desire to bring before it.—Par. 18, *S. O. 52, A. G. O., Washington, D. C.*, March 7, 1891.

RETIREMENT.

FRYER, BLENCOWE E., *Lieutenant-Colonel and Assistant Medical Purveyor*, February 24, 1891.

PROMOTIONS.

GREENLEAF, CHARLES R., *Major and Surgeon*, to be Lieutenant-Colonel and Assistant Medical Purveyor, February 24, 1891.

WINNE, CHARLES K., *Captain and Assistant Surgeon*, to be Major and Surgeon, February 22, 1891.

WILCOX, TIMOTHY E., *Captain and Assistant Surgeon*, to be Major and Surgeon, February 24, 1891.

AINSWORTH, FREDERICK C., *Captain and Assistant Surgeon*, to be Major and Surgeon, February 27, 1891.

HOWARD, VALERY, *Captain and Assistant Surgeon*, to be Major and Surgeon, February 27, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 14, 1891.

KITE, G. W., *Passed Assistant Surgeon*.—Detached from New York Hospital, and ordered to the "Lancaster."

NORTH, J. H., Jr., *Assistant Surgeon*.—Detached from the "Lancaster," and wait orders.

SMITH, G. T., *Assistant Surgeon*.—Detached from the "Independence," and ordered to the "Mohican."

LUNG, GEORGE A., *Assistant Surgeon*.—Detached from the "Mohican," and ordered to Washington, D. C., in charge of insane patients.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE TWO WEEKS ENDING MARCH 14, 1891.

LONG, W. H., *Surgeon*.—Granted leave of absence for seven days, March 13, 1891.

AUSTIN, H. W., *Surgeon*.—To proceed to Baltimore, Md., for special duty, March 14, 1891.

GODFREY, JOHN, *Surgeon*.—Detailed as Chairman of Board for Physical Examination of Officer of Revenue-Marine Service, March 4, 1891.

BANKS, C. E., *Passed Assistant Surgeon*.—To proceed to Boston, Mass., on special duty, March 7, 1891.

PERRY, T. B., *Assistant Surgeon*.—Leave of absence extended thirty days, March 13, 1891.

HOUGHTON, E. R., *Assistant Surgeon*.—Detailed as Recorder of Board for Physical Examination of Officer of Revenue-Marine Service, March 4, 1891.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication, or 250 reprints will be furnished instead of payment, provided request for reprints be noted by author at top of manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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ORIGINAL ARTICLES.

NOTES ON THE PATHOLOGY OF PELVIC INFLAMMATIONS.[1]

BY A. J. C. SKENE, M.D.,
OF BROOKLYN, N. Y.

WHILE the knowledge of the pathology of pelvic inflammation has greatly advanced in recent times, there is still a wide diversity of opinion among authorities regarding its causation, and the relative frequency with which the several organs and tissues become involved.

This difference of opinion results from a difference in the methods of observation. Some have drawn their conclusions from clinical histories and from physical signs obtained by manual and instrumental exploration; others have made deductions from post-mortem examination; while quite recently a number have based their opinions upon the observations which they have made after abdominal section. To reach the facts requires prolonged and oft-repeated observation from all these points of view. One of the difficulties encountered in the observation, and one which has led to many differences of opinion in regard to the pathology, is that pelvic inflammations seldom come singly. Many of them come together, and so complicate one another that it is impossible to ascertain anything definite regarding the lesions, although investigated in every possible way.

It simplifies the subject and gives more definite results to consider separately the pathology of each form of inflammation which has been found to occur, and then to consider the groups which they naturally and actually form.

I. *Pelvic Cellulitis.*—This was at one time regarded as the most frequent of pelvic inflammations, but recent observations show that it does not take first rank in this respect. Extremists have hinted that it is very rare, and that when it does exist it is secondary to peritonitis or salpingitis. As a matter of fact, it occurs independently of either of these inflammations, and in this respect may be considered a distinct and primary affection. It is generally caused by sepsis, or by gonorrhœal infection derived from the vagina or cervix uteri, and transmitted to the cellular tissue through the bloodvessels or lymphatics; or by contusions of the cellular tissues which cause extravasation and necrosis without any apparent extrinsic infection. These conditions are especially operative in the puerperal state, but may be due to injuries received during surgical operations. Another known cause, although a very rare one, is the rupture of a vessel in the cellular tissue—a pelvic apoplexy. This does not necessarily cause inflammation of a distinctive character, and only does so, perhaps, when the blood is in a morbid state. These are the causes of primary cellulitis.

The course pursued by the inflammation is the same as in cellular tissue generally. It may end in resolution or in suppuration, the size and location of the abscess depending upon the extent of tissue involved. Pus is almost always discharged through the vagina, occasionally through the abdominal wall, rarely through the bladder or rectum. In a few cases the pus has burrowed outward and upward to the sheath of the psoas muscle. If the abscess opens at its most dependent part evacuation and drainage are complete, and recovery is sometimes so perfect that not a trace of the former disease can be found upon examination either during life or after death. This fact has been used as an argument to prove that a cellulitis did not exist.

This is not the invariable history of cellulitis. Suppuration may continue indefinitely, because the evacuation is incomplete and the drainage imperfect, owing either to the location of the opening in the abscess, or to the fact that there is a large mass of inflammatory products honeycombed with small abscesses. In some cases the abscess wall is very thick and is a long time in disappearing after the sac has closed. This leaves a solid mass in the cellular tissue and some fixation of the uterus. This condition is called chronic cellulitis by some, but it bears the same relation to inflammation as do ashes and charred timbers in a building to an extinct fire. Most of the extreme modern pathologists diagnose this condition as tubal, ovarian, or peritoneal inflammation.

II. *Pelvic Peritonitis.*—This occurs as a distinct affection. Its presence alone has been recognized clinically and abundantly demonstrated post-mortem.

The cause of primary peritonitis is sepsis conveyed through the lymphatics which run directly from the vagina and cervix uteri to the pelvic peritoneum. In this respect the causes of pelvic cellulitis and peritonitis are somewhat alike. When there are superficial abrasions of the mucous mem-

[1] Read before the Medical Society of the State of New York, February 3, 1891.

brane, the septic material in the vagina or cervix causes peritonitis, while deeper injuries, like lacerations, are prone to eventuate in cellulitis. This is only a possible explanation of well-known facts.

Among the causes of pelvic peritonitis are:

1. Certain constitutional conditions which predispose to inflammations of serous membranes, the most notable of which are advanced renal disease and tuberculosis.

2. Rupture of a Graafian follicle, presumably having morbid contents.

3. Exposure and excesses.

The relative importance of these is not well established. The fact, however, is known, that inflammations of the pelvic peritoneum and the pleura occur as primary affections when the cause cannot be definitely discovered. Perhaps some pathological state of the blood may be responsible for the predisposition, and some unnoticed slight traumatism may be the excitant.

Secondary pelvic peritonitis will be referred to later. Pelvic peritonitis may be circumscribed or may involve the whole pelvic peritoneum. In the primary form the process, as a rule, ends with transudation and exudation, and rarely does suppuration occur, unless the cause is sepsis of a virulent character, or tuberculosis. If suppuration occurs, or if there is a large serous transudation, the pus or serum accumulates in the sac of Douglas, and is walled-in, if the case does not end fatally, by an exudate which bridges over the sac of Douglas. If the walling-in is complete and protects the subject from fatal septicæmia, the pus is discharged through the rectum in all or the great majority of cases, unless evacuated by the surgeon. Adhesions take place where the inflamed surfaces meet. In mild cases these are generally limited to the abdominal ends of the tubes and their nearest neighbors, and to the most dependent parts of the peritoneum. Recovery follows, but is slow in all cases, and is seldom complete. The structures are more or less damaged by the exudate and adhesions, according to the extent of the disease, and in time the exudate and even the adhesions may be taken care of by absorption. The products of this inflammation have in the past been mistaken for the results of pelvic cellulitis. While they usually cause pain and discomfort and impair the functions of the pelvic organs, they do not tend to a fatal result, and generally yield to prolonged treatment.

III. *Salpingitis.*—This form of inflammation seldom occurs alone. Primary cases are due to tuberculosis, a hæmorrhage or occlusion of both ends of the tube. In the latter condition, the natural secretions accumulate and cause a limited inflammatory process. In the great majority of cases salpingitis is caused by endometritis, either catarrhal or septic. It is sometimes found to exist in the absence of all the other forms of pelvic inflammations which we have considered.

When caused by catarrhal endometritis, salpingitis ends either in recovery or in hydrosalpinx, which may in time excite pelvic peritonitis, or it may, by discharging into the uterus, end in recovery, but leave a more or less damaged tube. Again, it may remain and give trouble until the tube is removed by the surgeon.

When the cause is septic or specific, pyosalpinx usually results. This leads to other and serious complications and has no tendency to recovery, except when after repeated attacks or a single violent one of peritonitis the diseased tube is walled-in above, and, by disintegration of the opposing tissues below, it opens into the rectum or into the cellular tissue, and then finds an exit through the vagina or other pelvic viscera. This does not always terminate the disease. Prolonged suppuration and septicæmia may cause a fatal termination.

IV. *Inflammation of the Ovaries.*—This occurs in a variety of forms, but there are only two which present distinct clinical histories: (*a*) The *acute*, which ends in suppuration, and (*b*) the *degenerative* or so-called *chronic* ovaritis.

(*a*) *Acute ovaritis.* Acute ovaritis is, as a rule, a secondary affection. The causes are puerperal and specific inflammations and neoplasms, and degenerative disease of the ovaries.

Ovarian abscesses found in connection with puerperal metro-peritonitis are familiar examples of the former, and suppurating ovarian cysts illustrate the latter. The termination of ovarian abscess is in death; at least that is the tendency—the abscess rupturing and causing fatal shock or peritonitis. The exceptions to this are when relief is given by the surgeon, before or at the time of rupture, and when the ovaritis sets up peritonitis before rupture and the ovary becomes walled up in the sac of Douglas. The abscess may also discharge through some of the pelvic viscera or be reached through the vagina or by abdominal section.

The important point to be observed in the pathology with reference to treatment is that there is a difference between those cases in which the diseased ovary is lodged in the sac of Douglas and walled-in by protecting exudate, and those that are not so guarded. This difference should determine whether the interference of the surgeon is to be immediate or delayed.

(*b*) *Chronic ovaritis.* This is characterized by histological changes rather than by the development of the products of ordinary inflammation, and is a very common affection. It has been claimed that it is caused by endometritis, the assertion being based upon the similarity of structure of the

endometrium and the ovarian tissue, and the fact that endometritis and this form of ovaritis usually coexist. Much might be said on this point, but time only permits me to add that this method of causation is not proven. As nearly as can be ascertained the cause is malnutrition, giving rise to certain degenerative changes, which in their pathological histology bear a much closer resemblance to hepatitis and nephritis than to the products of inflammation in connective tissues and in serous and mucous membranes. The ovary is peculiar in this, that each performance of its function entails a certain irreparable destruction of a portion of its tissue. It is an organ that is continually degenerating during its functional activity, and hence it is difficult to find the line of demarcation between the physiological destruction of tissue and the pathological changes which occur from inflammation—difficult, I should say, to all but those who have a proclivity to remove ovaries. Surgeons of that tendency find evidences of disease with a facility which startles skilled pathologists. Ovaritis of this form, in an ovary that is not displaced, does not tend to fatal results, and hence does not call for ovariotomy. In many cases the degenerative changes in structure lead to atrophy, arrest of function, and the disappearance of all symptoms. Such atrophied ovaries are supposed to be the site of neuralgic pain, which is so violent and persistent as to call for extirpation. This is not invariably the condition which causes pelvic pain, if we may judge from the fact that removal of degenerated ovaries does not always give relief.

Any of the inflammations here referred to may lead to one or to all the others—that is, the one, instead of running its course alone and uncomplicated, may excite secondary inflammation in any of the other organs or tissues. But either of them may occur alone, and they all may occur in succession, and even coexist.

Cellulitis often leads to secondary peritonitis, while peritoneal inflammation rarely extends to the cellular tissue. When such an extension occurs it is usually from burrowing of pus that has become walled-in, forming an abscess in the sac of Douglas. This takes place late in the progress of the disease and is sometimes considered a recurrence or relapse of the peritonitis. Along with the acute symptoms, which are lighted up by the burrowing of pus, come the physical signs of the cellulitis. When suppuration takes place in the cellular tissue it is often diffused and does not present a well-defined pus sac as in primary cellulitis.

Peritonitis frequently damages the ovaries and outer ends of the tubes, but it is seldom that a general inflammation of either is caused by peritonitis. When all of these coexist, inflammation of the tubes and ovaries occurs first, as a rule.

Looking at the subject as a whole, there are a few well-defined facts. The first of these is, that no matter where inflammation begins or what parts it involves, if the process gives rise to the formation of pus, the pus must be removed by the surgeon either through the vagina or by laparotomy in the majority of cases. Still another fact worthy of mention is, that in case the inflammation subsides before suppuration occurs, the resultant lesions are rarely improved by operative surgery—they do best upon general treatment.

By way of making more clear the foregoing statements in regard to the pathology, a word may be said about the lesions which remain or which may develop after laparotomy. The adhesions which surround a tube filled with pus and need to be broken up or divided in order to remove the tube, reunite, and more adhesions form. This is inevitable and must be tolerated; but when a laparotomy is done for the purpose of diagnosis or to remove an inflamed organ which is presumed to be offending, the lesions are seldom improved, and the suffering is not rendered less bearable to the patient.

167 Clinton Street.

FORCIBLE INTERMITTENT TRACTION IN THE TREATMENT OF CLUB-FOOT.[1]

By NEWTON M. SHAFFER, M.D.,
Attending Surgeon in Charge of the New York Orthopædic Dispensary and Hospital; Consulting Surgeon to St. Luke's Hospital, New York.

The phrase "forcible intermittent traction" is intended to describe a simple but effective operation for reducing certain non-inflammatory chronic deformities, which the author of this paper introduced to the medical profession in the New York *Medical Record* for November 23, 1878, in a paper entitled "Traction in the Treatment of Club-foot." The subject was further amplified in a paper on "Knock-knee and Bow-legs," published in *The American Journal of Obstetrics and Diseases of Women and Children*, in July, 1881.

The operation, which was referred to in the papers mentioned as "an exaggerated momentary pressure," is based upon the tolerance of the skin and subcutaneous tissues to a very great degree of pressure for a brief period of time, and it is further based upon the well-known law that in order to remove a given obstacle the "force must exceed the resistance." The chief causes which led to the application of these two principles to the reduction of chronic deformity were especially the imperfections in the

[1] Read before the Orthopædic Section of the Tenth International Medical Congress, held in Berlin, August, 1890.

conventional apparatus for the treatment of club-foot, and the unsatisfactory results that followed their use.

The first thing that I strove to accomplish was to devise an apparatus which could be made to fit any ordinary club-foot at will, with the mechanism so arranged that when the initial force was used it could be directly applied to the resisting tissues. In short, I endeavored to imitate the action of the trained human hand when applied to the reduction of the deformity, and in all of the instruments here described it would seem that not only this object, but even more, has been accomplished, when one estimates the degree of force which the human hand is capable of applying and compares it with that exerted by the apparatus here described.

In using forcible, intermittent traction for the reduction of the deformities of talipes, either with or without tenotomy, myotomy, or syndesmotomy, the apparatus is so arranged that the pressure may be carried up to a point of educated tolerance by gradually increasing pressure, and as soon as the patient indicates that a maximum pressure is reached all force is to be *instantly removed*. If the apparatus is properly adjusted, each forcible traction will be followed by a yielding of the deformity, and if it is applied frequently and systematically, the improvement will soon be very noticeable. If the deformity fails to yield after a sufficient trial, a free subcutaneous section of all the easily reached muscular and fibrous tissues will so modify the resistance that the condition will be a formidable one which does not then yield to this force.

In an article published in the New York *Medical Journal*,[1] March 5 and 12, 1887, I gave some directions for the use of forcible intermittent traction in the treatment of club-foot. Time has demonstrated their general correctness, and I reproduce them here with such modifications as experience suggests.

The first step is to adjust the apparatus *so that it will exactly fit the deformity*. Determine at the first application how much traction can be tolerated by the patient without causing pain. Proceed easily and gently at first, and after a few applications the traction may be increased to any desired extent without difficulty. After the patient is accustomed to the apparatus, keep the traction-shoe applied the greater part of the day, using a simple retention, walking, or a night, apparatus at all other times. By this means the foot will not be permitted to relapse into its former position of extreme deformity.

When the patient learns that he can control the amount of traction, commence a systematic application of the forcible intermittent traction.

The traction should be applied every fifteen or thirty minutes for the period of educated tolerance, be it for one second or five minutes. Patients vary greatly in their ability to bear the pressure, but all may be educated very soon to endure a sufficient degree of pressure to make "the force exceed the resistance" to an extent which shows an appreciable gain in a short time. Experience proves that what is gained during the seconds or minutes of forcible traction is not wholly lost during the period of intermission, and during the latter time the patient may walk about in the traction apparatus, which is adjusted to an easy position with a minimum pressure.

If these rules are followed there will soon be found a lengthening of the plantar tissues, and the gastrocnemius will become visibly longer. In the average case the shortened tissues will yield without the use of the knife; but in some cases, after a few weeks of forcible traction, the resisting tissues seem to yield no further—or, yielding, will, like an elastic cord, gradually shorten soon after the traction is removed. As soon as it is demonstrated that this is the case, all the resisting muscular and fibrous tissues should be divided subcutaneously, when it is probable that one prolonged traction under anæsthesia will remove the deformity.

Excoriations are not likely to occur, and if suitable precautions are taken they do not occur at all. The only case of troublesome excoriations that has happened in my own experience resulted from a too prolonged traction after operation and under anæsthesia.

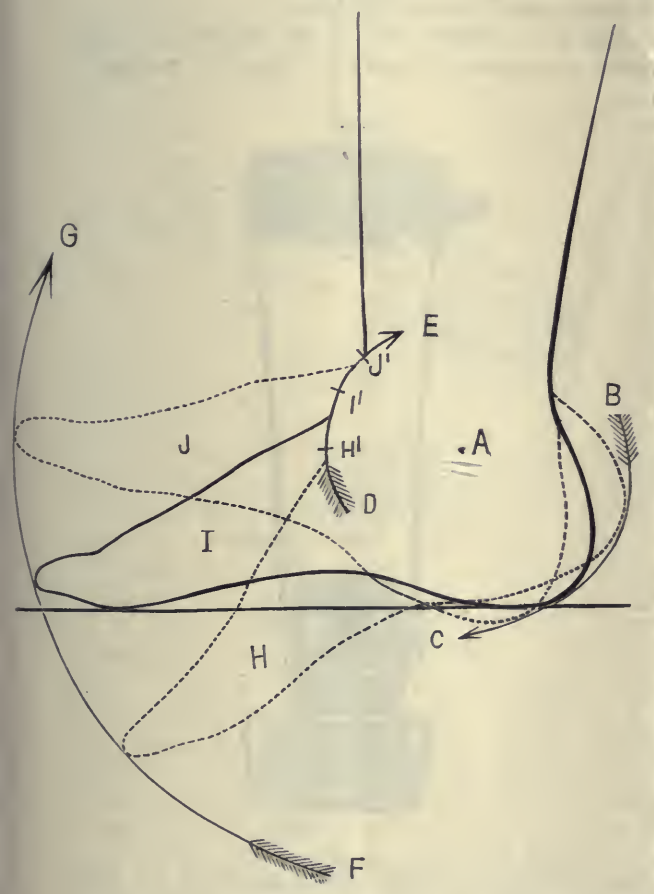
In using forcible traction without tenotomy, etc., I instruct someone interested in the patient in the use of the apparatus, so that treatment may be carried out at home. This is always very easily accomplished in private practice. The pain inflicted by properly applied forcible traction is so slight that neither the patients, if they are children, nor their parents complain. Adolescents and adults bear it without any complaint whatever.

The question will at once be asked, "What is the length of time required to secure a good result by the use of this method?" My answer is, that if subcutaneous section and forcible traction are used as the initial procedures, the reduction of the deformity can be ordinarily accomplished at one sitting during the anæsthetic stage of the operation. But if a preliminary trial of traction is made, and if the conditions favor its use to the exclusion of tenotomy, etc., the treatment will probably require six months or a year. As is well known, it does not do to dispense entirely with treatment after the simple reduction of the deformity by operation. An apparatus must still be worn, and all that is ordinarily gained by the cutting operation is the immediate reduction of the deformity. At the end of a

[1] "The Use of Traction in the Treatment of Club-foot."

year the patient who persists in the traction treatment alone will have a much better foot than the one which is subjected to the cutting process. When time is of importance, as it is among some dispensary patients, the rapid process should be employed. When, on the contrary, time is not so important an element, and when the best attainable result is desired by the patient or his parents, it is well to use the forcible traction alone until it is demonstrated that the result cannot be obtained by this means. And when it is stated that several obstinate cases, which were condemned to osteotomy—or amputation—have been cured by forcible traction alone, and without the aid of the knife, it will be seen that forcible traction promises a great deal.

FIG. 1.



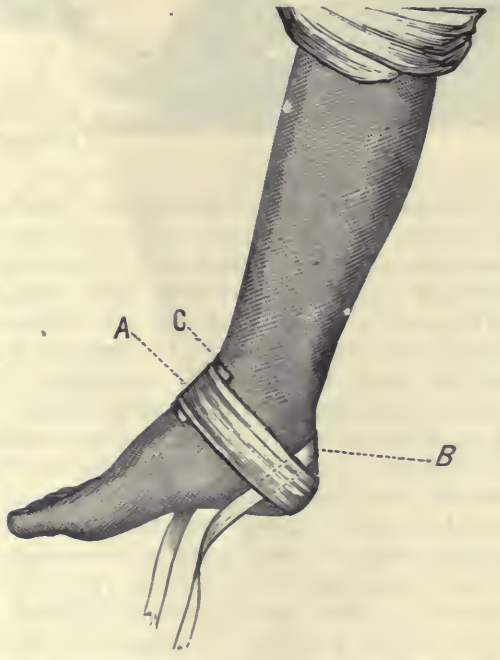
Three forms of apparatus are used: one for the reduction of simple equinus, known as the "antero-posterior traction-shoe;" and two for the reduction of equino-varus: one known as the "internal lateral traction-shoe," and the other as the "external lateral traction-shoe."

I will briefly describe these instruments, calling attention to the antero-posterior apparatus first.

The centre of antero-posterior motion at the ankle follows an imaginary line which touches the lower end of the external malleolus, and passes out below the internal malleolus. When the ankle is flexed or extended, motion takes place upon this transverse axis. (A, Fig. 1.) If we study the diagram (Fig. 1) further we will see that A, I, shows the foot in the right-angled position—*i. e.*, with the sole of the foot forming an angle of 90° with the leg; A, H, shows the foot in extreme extension, the sole of the foot being at an angle of about 135° with the leg. A, J, shows the foot in extreme flexion, the sole of the foot forming an angle of about 70° with the leg.

The position of the foot in talipes equinus is represented by the position A, H, and the object of treatment is to carry the foot from A, H, to the position A, J. The whole foot rotates upon the centre A. Hence the heel must describe the arc of a circle represented by the curved arrow, B, C., and it will be noted that the direction of this curve is *downward* and *forward*. The toes, also, rotate around the same centre, and in passing from H to J they follow the curved arrow, F, G, the direction of which is *upward* and *forward*. The head of the astragalus lying *above* the centre of motion A, (the heel being below the centre) must move in a direction opposite to the heel. The head of the astragalus follows the direction of the curved arrow D, E, its direction being *upward* and *backward*.

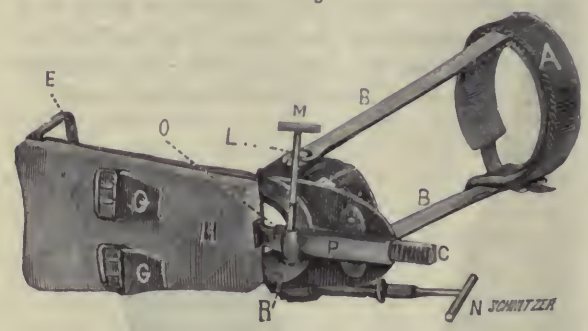
FIG. 2.



In the conventional forms of club-foot shoe for the treatment of talipes equinus a strap is passed over the neck of the astragalus, and in this way the

heel is secured in the heel-cup of the apparatus. When an attempt is made to flex the ankle, the upward movement of the head of the astragalus is at once arrested, and the heel slips beyond the control of the apparatus. Anything which interferes with the *descent* of the heel, or with the *ascent* of the head of the apparatus at once interferes with flexion of the ankle. My first step, after having recognized the mechanism of the antero-posterior movement of the ankle, was to apply a "traction heel-strap" (see Fig. 2, B), which passes over the heel, and is then secured to the *anterior* part of the foot-plate of the apparatus (B, Fig. 5). By this means the heel can be absolutely kept in its position—*i. e.*, it can be held securely, and prevented from rotating *upward* and *backward* away from the apparatus. But this did not fully meet the conditions. The tight astragalus strap still prevented the *upward* movement of the astragalus. The next step was to divide the foot-plate of the apparatus transversely at a point corresponding with the medio-tarsal joint, and to connect the *heel* part with the *tarsal* part by a traction-rod. (Fig. 3.) We are now enabled to loosen

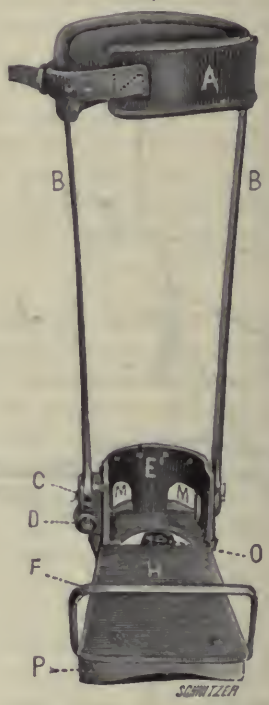
FIG. 3.



the astragalus strap after adjusting the apparatus and securing the heel traction-strap, so as to permit the upward movement of the head of the astragalus —while we can forcibly draw the heel *downward* and *forward* by the long traction-rod. Then another difficulty presented itself. The heel part of the foot-plate prevented the descent of the heel. For some time the reason for this was not plain, but it is explained in this way: as soon as considerable resistance is met with in bringing the heel downward and forward, the centre motion at A (Fig. 1) becomes blocked, and the centre of motion, upon which the heel is passing downward and forward, is transferred from A (Fig. 1) to the upward and backward rotating astragalus (H', I', J', Fig. 1), which is held in position by the strap already referred to. The heel, therefore, moves downward and forward upon a radius more than twice that of an unopposed movement in the normal ankle, and descends much more rapidly than the foot-plate of the apparatus, which has a transverse centre corresponding with the normal axis of rotation. The next step was, therefore, to remove the heel part of the foot-plate, and the result is the apparatus shown in Figs. 3 and 4. Fig. 3 is a view of the lower part of the foot-plate. The buckles, G, G, for the attachment of the traction heel-strap; the traction-rod, C; the cylinder, P; the flexion and extension worm and screw controlled by the key, M, are plainly shown. The key, M, is in position to throw the anterior part of the foot-piece forward. The opening, O, for the descent of the heel, in the foot part of the heel-cap, surrounded by its strong rim, R, is also shown. When traction is made, and the heel is brought downward and forward, it passes through this opening unopposed by any obstruction.

Fig. 4 is another view of the apparatus. The worm and screw are shown at C and D; the heel-

FIG. 4.



cup at E, with the two openings, M, M, for the astragalus retention-strap; the opening, O, for the descending heel, and the bridge, F, for the reflected heel traction-strap.

Figs. 5, 6, and 7 show the detail of the action of this apparatus. In Fig. 5 the apparatus is adjusted to fit the deformity, the astragalus retention-strap, A, and the heel traction-strap, B, being in position. In Fig. 6 the apparatus has been carried by the key from the position of extension to the right-angled position, the foot still remaining, however, in its

FIG. 5.

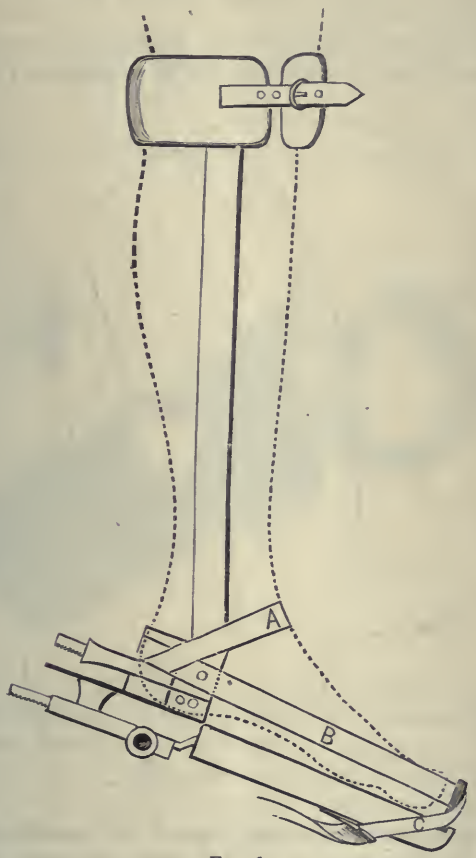
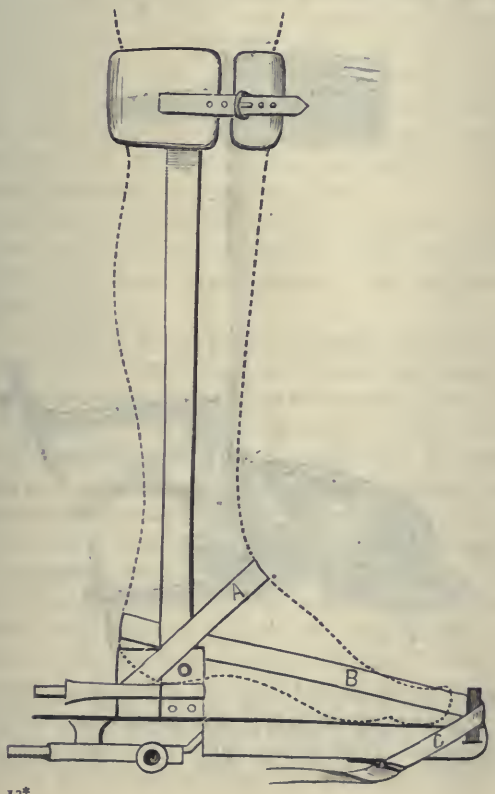
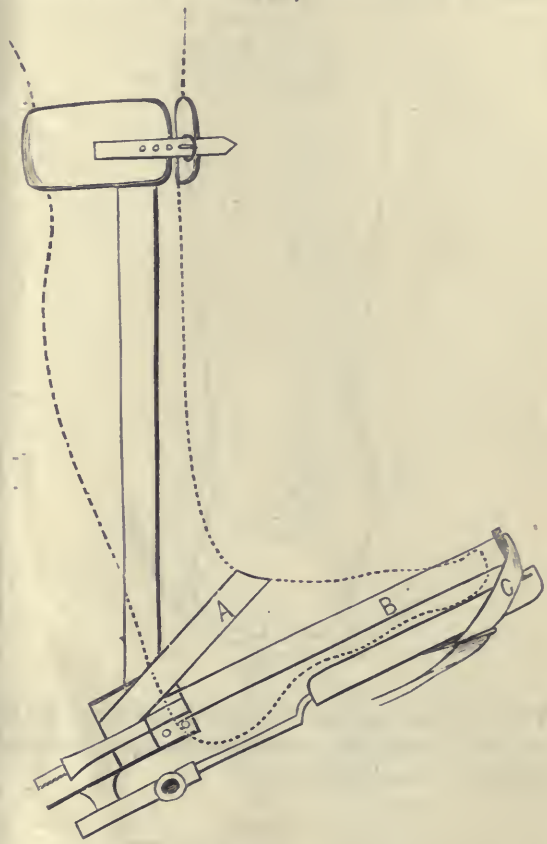


FIG. 6.



extended position. The apparatus has changed, but the foot has not. In Fig. 7 the apparatus has been

FIG. 7.



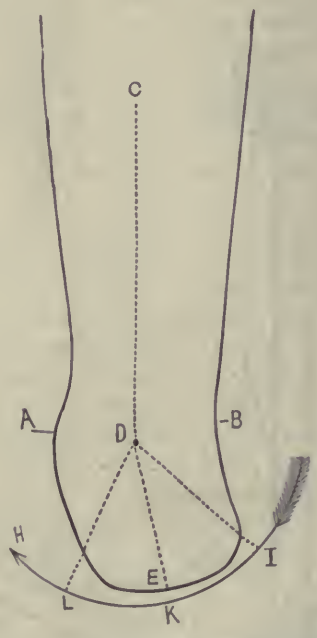
placed by the key in a position of flexion, and the traction-rod has been used to throw the foot-plate forward.

The heel, which must follow this movement, has been drawn downward and forward into the desired position.

The force that can be applied by this apparatus is practically unlimited. Many cases of obstinate club-foot have yielded to this apparatus alone. The force can be applied with mechanical exactness at the desired points, and a very great degree of traction is exerted upon all the tarsal joints, as well as upon the post-tibial tissues. Under anæsthesia and with free subcutaneous division of the tendo Achillis and the plantar fascia it can be made to do very efficient service in desperate cases; while in ordinary cases of club-foot, in which there is a residual resistance after free subcutaneous incisions, there is little or no difficulty in removing the deformity, provided the lateral displacement of the tarsus does not prevent the application of a strictly antero-posterior force. If the "lateral deformity" of the tarsus be considerable, one of the lateral instruments should be used.

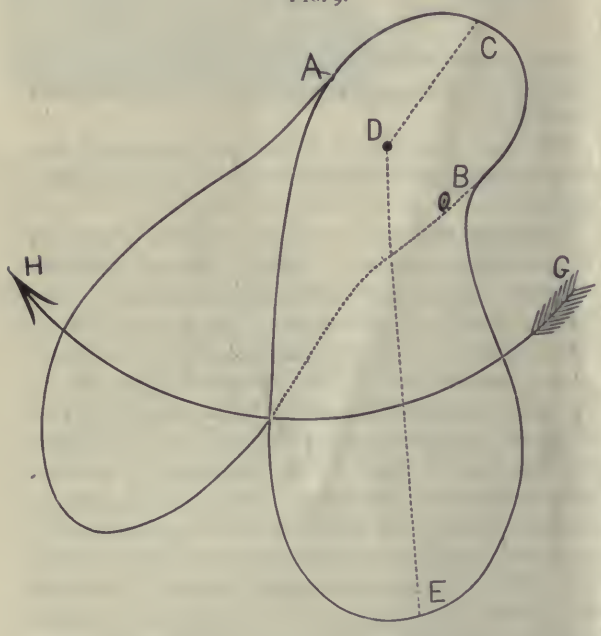
The internal lateral traction shoe will now be described. This apparatus is a *pusher*, being applied to the *concave* side of the deformity. Its general outline and appearance is shown in Figs. 11 and 12.

FIG. 8.



This and the external lateral traction shoe are the results of much study and experiment, to the details of which I need not refer.

FIG. 9.



The deformity of equino-varus is a very complex one. The tarsus is rotated upon three axes: first, upon a transverse axis (equinus); second, upon an antero-posterior axis (Fig. 8); and third, upon a vertical axis (Fig. 9).

In order to meet all these indications, an apparatus should be constructed so as to produce a lateral pressure in the direction of the curved arrow (I, H, Fig. 8), and also in the direction of the curved arrow (G, H, Fig. 9), the heel being controlled and the equinus antagonized by the traction heel-strap, as shown in Fig. 7. The centre of

FIG. 10.

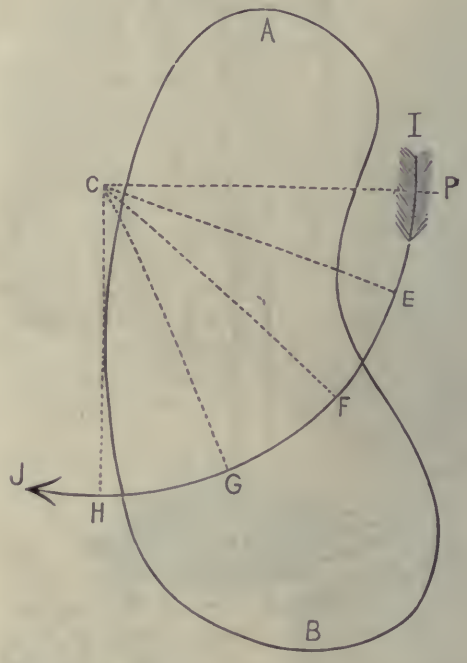
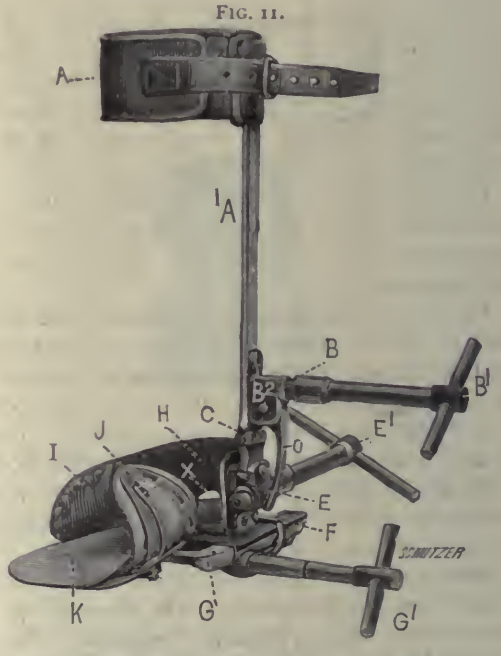
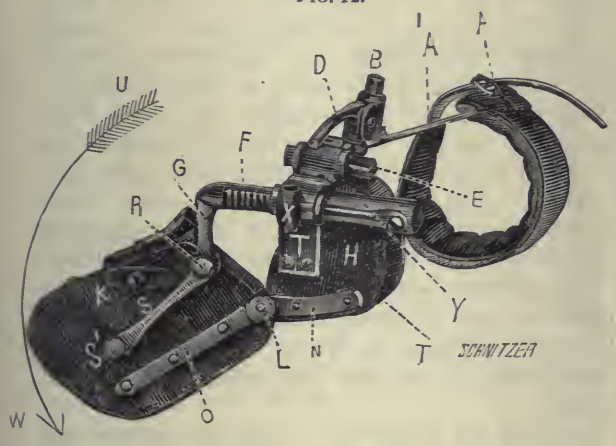


FIG. 11.



motion for pushing the os calcis toward a straighter position (downward or outward) cannot be located in the internal lateral apparatus at the point indicated (D, in Fig. 8), so it is placed at the point B (Fig. 8). The centre of motion for the deformity which occurs on a vertical axis should be

Fig. 12.



located at the point C (Fig. 10). This being understood, we may now describe the apparatus. The inside lateral pusher is shown in Figs. 11 and 12.

In Fig. 11 the key B′, acting on a hinge at C, throws the hinged lever and screw O toward the rotated heel. The key E′ raises the toes by a worm-and-screw movement at E, while the key G′ throws the anterior part of the foot *forward* and *outward*, as shown by the centre C (Fig. 10) and by the centre L (Fig. 12). There is an open heel-plate for the descent of the heel upon the rotating astragalar centre, and the traction heel-strap, as well as the retention astragalar strap, is used as in the antero-posterior traction apparatus.

This apparatus is particularly applicable to obstinate cases of equino-varus, where the resistance is principally in the plantar tissues and in the gastrocnemius muscle.

The external lateral traction apparatus is devised to meet a class of obstinate cases in which the resistance exists principally in the internal lateral ligament of the ankle-joint and in the ligaments of tarsal bones. This apparatus has not been engraved in detail. Its action can, however, be illustrated by the accompanying diagrams (Figs. 13 and 14), which will explain its mode of action, and will at least suggest the powerful leverage it is capable of exerting. The apparatus is applied to the *convex* side of the deformity and acts as a *puller*. The sketch (Fig. 13) shows in outline the principle involved. The apparatus here shown is intended for the outside of the left foot and leg in a case of equino varus. The bar, H, passes downward in a line which corresponds with the fibula and terminates in an antero-posterior hinge. Connected with this hinge is a *retraction-rod*, E, which when used with a key at its opening,

Fig. 13.

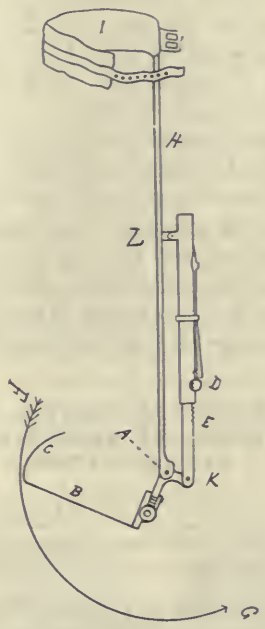
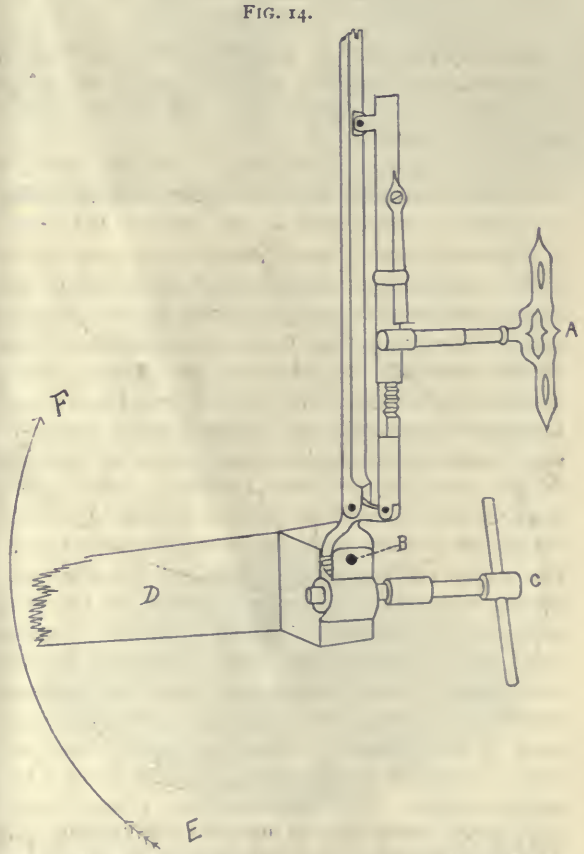


Fig. 14.



D, carries the distal part of the apparatus *downward* and *outward* upon the centre A in the segment of

a circle indicated by the curved arrow F, G. Of course, it would be useless to apply this *outward* and *downward* movement unless the heel is restrained. This is accomplished by the traction heel-strap (as in Fig. 2), and by means of the worm and screw shown at B, Fig. 14, which, when used by key C, places the foot-piece, D, at any desired point between E and F.

Each of these instruments represents the principle named in the title of this paper, viz., forcible, intermittent traction, and each instrument has produced results that are more than satisfactory. The principle involved may be amplified and an osteoclast can easily be constructed upon the principles here enumerated, so great and so easily controlled is the force developed by the mechanism described.

A CYSTIC MYOMA OF UNUSUAL CHARACTER TREATED BY ELECTRICITY AND ASPIRATION.

BY G. BETTON MASSEY, M.D.,
PHYSICIAN TO THE GYNECOLOGICAL DEPARTMENT OF HOWARD HOSPITAL AND TO THE DISPENSARY FOR THE TREATMENT OF THE DISEASES OF WOMEN BY ELECTRICITY.

THIS case is worthy of a special report because of the peculiar and most painful swelling of the tumor at stated periods. It has also taught me that a myoma may require an entirely different method of electrical treatment from a fibroma, and that a cystic degeneration of a myoma is no bar to its successful electrical treatment.

When first seen there was a nodular mass of irregular consistency filling the pelvis and extending to within three-fourths of an inch of the navel. The greatest lateral breadth was five and one-quarter inches, including a process that extended to the right from the main portion of the tumor. Examination showed the mass to be an interstitial uterine tumor involving the whole of the organ, with a special projection to the right. The lady, who was forty-seven years old, had suffered seven years with this trouble, which began three years after the birth of the youngest of three children. During this time, at each recurring menstrual period, she would be thrown into an attack of severe illness and pain, the tumor swelling until it touched the ribs, producing a profound disorganization of all the vital activities by suddenly applied pressure. Though there was no general peritonitis, the stomach, bowels and kidneys refused to act, and the patient suffered continuously from paroxysmal pain until the appearance of the menstrual flow. At these times the tumor increased to four and five times its size between attacks. The measurements I have given were taken at the time of the patient's admission to my sanitarium, December 3, 1889, and were smaller than they had been for several months. There was no history of hæmorrhages or discharges of any kind, which I think is characteristic of myomata, and the menstrual flow was scant and somewhat irregular.

Treatment was begun by the Apostoli intra-uterine method, and at the end of a month the patient was in a greatly improved condition. This, however, did not last long, for there was a perceptible increase in the size of the tumor in January, 1890, with other signs of an impending attack. No attack occurred, nevertheless, until the following April, but I was greatly disappointed at the obstinate refusal of the tumor to decrease in size, which I am now sure was due to the irritation caused by too frequent intra-uterine applications in an œdematous myoma. The applications were generally made every other day, but caused such painful spasms of the uterine mass that the current strength was kept between forty and seventy milliampères. Each pole was used at different times. The result was simply to postpone the attack, which came on with great force in April, after the cessation of the treatment.

During the following summer the patient had several severe attacks, the tumor failed to go down to the size usually maintained between attacks, and the patient, much reduced in strength, was further troubled with œdema of the right leg. Rejecting my advice that an operation be performed before the appearance of another such attack as I had witnessed, the patient and her friends urged the continuance of electricity until its various methods had been thoroughly tried. I, therefore, began the use of a method which I have since learned is similar to that of Damion, of Paris, namely: vagino-abdominal galvanic alternatives. The Apostoli clay pad was used in the usual position, and for the active pole a cotton-covered carbon electrode in the vagina pressed well up against the growth. By this method 150 milliampères were readily turned on without discomfort, the current being decreased, reversed, and again turned on without shock by means of the controller. This was repeated six times at each sitting.

This method of treatment, which has been in my experience usually ineffective in hard fibroids, gave immediate results in this soft muscular growth, ameliorating the symptoms and gradually effecting a decrease in size. Recognizing the contractile nature of this growth, I began also to apply strong primary faradic currents to it through the thin abdominal walls, the active electrode being the size of the hand, with a large dispersing electrode on the back. The relief this caused was always immediate though doubtless temporary, for a three-minutes application of a gradually produced strong current caused a diminution in the size of the right wing of the tumor that was plainly perceptible to both sight

and touch. As, however, but little permanent reduction was occurring, a more thorough examination was made, disclosing the presence of several cysts of considerable size in the right extension of the growth. The patient was at once readmitted into the sanitarium and the largest cyst aspirated through the abdominal wall, two ounces of a clear, straw-colored liquid being drawn off. After a microscopical examination the liquid was pronounced by Dr. W. M. L. Coplin to be from a degenerating myoma, and contained many broken-down blood-corpuscles. After this procedure, and after each of five subsequent aspirations of different cysts, the tumor showed a continuous decrease, the contractions produced by the current becoming permanent. The electrical treatment by the modified method was continued for several months, but owing to the patient living some distance from Philadelphia the applications could not be made oftener than once per week. The tumor, which is now no larger than a small orange, is continuously decreasing in size, and has for some four months passed out of the life of the lady, who is no longer conscious of it unless reminded of its presence by others. She is in the enjoyment of perfect health and appears at least ten years younger than when I first saw her.

I have given the exact details of this case because it has been already partially reported by me as an electrical failure, in a discussion before the American Association of Obstetricians and Gynecologists in September, 1890. In the sequel, as seen, it is by no means a failure, and illustrates most admirably the denutritive and contractile power of dense interpolar action, while at the same time warning us of the inefficiency of intra-uterine galvanic applications in myo-cystic growths, in spite of their great value in ordinary fibroids.

In reviewing this case at a period of time sufficiently remote to permit of an accurate estimation of results, I cannot refrain from a feeling of satisfaction that they were obtained without the patient passing through an operative shadow of death, without mutilation, and with an abdominal wall that will remain free from the possibility of a future hernial weakness.

212 South Fifteenth St.

IMPROVED EYE-PADS FOR THE AFTER-DRESSING IN CATARACT OPERATIONS.

By L. WEBSTER FOX, M.D.,
of Philadelphia.

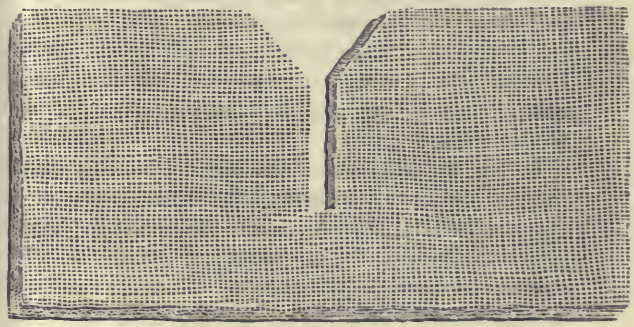
The after-dressing in cataract operation is a very important factor in its successful termination. Prior to the days of Von Graefe very little or no dry dressings were applied in the after-treatment in ophthalmic operations.

Before that day the lids were held in place by adhesive plaster or simple bandages. Von Graefe, however, changed this mode of after-dressing, and his followers have tenaciously adhered to his iron-clad rules ever since.

Several years ago Dr. Michel, of Charleston, and Dr. Chisolm, of Baltimore, revived, as they called it, the "rational method" of after-treatment in cataract operations, simply using adhesive-plaster dressings. In the light of our present knowledge of aseptic surgery there are many who still follow the rules given by Von Graefe.

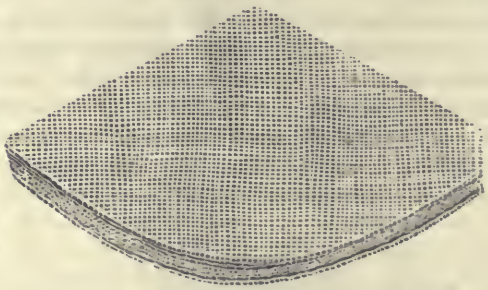
Every ophthalmic surgeon has his own peculiar way of applying a dressing to an eyeball. Patent lint and aseptic absorbent cotton held in place by a bandage constitutes this dressing. I have used such a dressing for the past ten years and the results obtained have been all that could be desired. The preparation of eye dressings has always taken considerable time and their adjustment is not always satisfactory.

Fig. 1.



The eye-pads now used are of two kinds, black and white, and are made as follows: First, a lining of antiseptic gauze, then a layer of absorbent cotton, next the black linen sheet, and lastly, the white gauze for the external covering. The size of the pad is six and a half by three and a half inches. The white pads (Fig. 1) are made in like manner, omitting the black linen, all hydronaphtholated.

Fig. 2.



The smaller pads fit closely over the eyeballs (lids closed), the material being identical with that of the

larger ones. Both large and small pads are shaped and cut by a steel die. They fit comfortably and evenly to the face, being held in place either by adhesive strips or a knitted bandage. I am indebted to Messrs. Seabury and Johnson for carrying out my suggestions in the making of these eye-pads.

1304 WALNUT ST.

THE ASEPTIC METHOD AS APPLIED TO INTRA-NASAL SURGERY.[1]

BY JOHN O. ROE, M.D.,
OF ROCHESTER, N. Y.

No medical or surgical procedure has shown a more remarkable growth than the antiseptic method as applied to the treatment of wounds—a method which has created a new epoch in the art of surgery, and has made immortal the name of its first scientific expounder.

In the earliest application of this method the primary object was to destroy the noxious germs which infest the wound and which obstruct the healing of the part by the putrefactive or fermentative processes due to their presence. This early procedure, which may be regarded as strictly antiseptic in its character, has gradually given way to the method of asepsis, the purpose of which is to prevent the infectious germs from gaining entrance to the wound.

In the application of the aseptic method, nasal surgery has not kept pace with other branches of the surgical art; and, therefore, the result of intra-nasal operations cannot compare favorably with operations upon other parts of the body in which aseptic measures are more thoroughly and efficiently employed. It is on this account that some rhinologists regard with disfavor the performance of any important surgical operations in the nasal cavity. The intra-nasal surfaces are considered so intolerant to foreign substances that it is quite generally believed that any method which renders the nasal cavity aseptic after an operation cannot be tolerated by the patient. It is my purpose to show in this paper that aseptic measures can be as adequately and successfully employed in intra-nasal as in other surgical operations; that the field of operation can be as thoroughly cleansed and sterilized; that during the operative procedure all the aseptic measures which are deemed essential in operations upon other parts of the body, can and should be carried out in the nose; and that in the dressing of the wound the parts can also be completely sterilized and sealed both to internal and external noxious influences.

[1] Read before the Laryngological Section of the Tenth International Medical Congress, Berlin, August 7, 1890. (In the first report of this Section sent to the journals by its Secretary a synopsis of this paper was omitted, for the reason that the copy of it sent to him was lost in the mail. *Vide* Internat. Centralbl., Nov. 1890, p. 234.)

In order to ascertain the methods which are at present employed by different operators in this field of surgery, I wrote to a number of distinguished specialists, requesting from each a brief statement of the procedure which he adopted in the dressing of wounds of the nose after operations. I regret that the limit of this paper does not permit me to give full credit to my friends for their valuable communications, but I shall reserve this for another article. Only one of the number adopted a method which he deemed aseptic in its nature. Nearly all, however, considered the employment of some kind of antiseptic measures after operations of very great importance; but everyone who expressed himself upon the subject believed that the comparative inaccessibility of the nasal cavity and the peculiar office and function of the nose precluded the possibility of employing any other than the "open method" in the healing of intra-nasal wounds.

The disadvantages attending the open method and the dangers to which the patient is subject are many. The first and most immediate danger is that of hæmorrhage after the styptic effects of the cocaine have disappeared. Again, there is a danger arising from infection due to the absorption of purulent or other noxious substances which may be generated in the nose, or to the germs of infectious diseases, such as erysipelas and the like, to which the unprotected surface is exposed. Moreover, there is the general inconvenience due to the great amount of care and attention required, and to the very frequent use of antiseptic washes and sprays necessary, which cannot be employed by the surgeon as often as the conditions require, and which, if left to the patient, will in almost every case be very imperfectly performed.

The disadvantages and inconveniences of the open method have suggested to some operators the use of some form of closed dressing. The method, however, that is usually employed is covering the wound with small pledgets of borated, bichloride or iodoform cotton, wool, or gauze. The inadequacy of such coverings is apparent. They are not only insufficient to exclude from the wound the germs contained in the acrid nasal secretions and those floating in the atmosphere, but such bits of cotton or wool simply lie in the nostril as foreign irritating substances.

Firmly convinced of the importance of some form of closed dressing, I was some time ago led to adopt certain measures which would avoid the defects just mentioned, and which would render the nasal cavity as nearly as possible aseptic during the healing of the wound. The methods which I have found best suited to this purpose I will briefly describe.

Previous to the performance of the operation, the nasal cavity is thoroughly cleansed with a warm

alkaline antiseptic solution, consisting of salt, boric acid, and bichloride of mercury (1 to 4000). It is needless to say that the instruments should be as scrupulously clean and sterilized as in operations upon other parts. A sterilized cocaine solution is then thoroughly applied (either in the form of a spray or by means of cotton wound upon a probe) until the parts are rendered insensible. The advantages of cocaine are very great. It not only relieves the pain of the operation, but, by contracting the soft tissues and by preventing hæmorrhage, it greatly facilitates carrying out the subsequent aseptic procedure.

After the operation is completed, and the wound is completely cleansed from all débris, irrigated with a hot solution of sodium chloride and bichloride of mercury (1 to 4000), and thoroughly dried, the wound, or rather the whole of the nostril, is dusted full of iodoform powder. The nose is then carefully and thoroughly filled with an antiseptic dressing, so as to seal hermetically the cut surfaces against bacterial invasion. This is done by means of plugs, consisting of thin metallic plates evenly, carefully and firmly wound with antiseptically prepared Angora wool or bichloride cotton, and which before being introduced are dipped into a solution of bichloride of mercury (1 to 3000). The utmost care must be exercised in plugging the nostril. The metal plugs should be of such size and shape that, when wound with cotton and inserted in the nostril, they completely cover the wounded surface. The thickness of the plug, which is regulated by the amount of cotton or wool that is wound on it, should be carefully adapted to the size and shape of the cavity which is to be plugged, so that it exerts an equable and somewhat firm pressure upon the whole of the wounded surface. The plug, when thus prepared, is firmly grasped with a pair of strong dressing forceps and carefully inserted, the nostril being dilated with a suitable speculum, and illuminated to enable the operator to guide the plug to its proper place. The metal plates can be made of any material. A flexible metal, like tin or copper, in thin sheets is preferable, as it permits the plugs to be bent to the exact shape and contour of the cavity. Ordinarily the plate is covered so thickly with the cotton as to prevent any irritation from chemical combinations with the metal. However, to guard against the possibility of this, they can be made of aluminum. The plug should not, when inserted, exert so much pressure as to be irritating to the patient, who should experience no more than the slight discomfort of being unable to breathe through that nostril.

When an operation in one nostril is sufficiently extensive to involve both the upper and lower portions, it is impossible to introduce a plug wide enough to cover the whole extent of the wounded surface. It then becomes necessary to introduce two or more plugs, beginning at the top of the nostril. The first plug is so shaped that it will fit the upper contour of the passage, and the successive plugs are put in below, until the last one passes evenly and snugly along the floor of the nostril. The length of the plugs should be governed by the extent of the wound and also by the depth of the nasal passage. There is no danger of introducing in the upper portion plugs which are too long, as the nostril will not permit it; but the one along the floor of the nose should not be long enough to reach the orifice of the Eustachian tube, and thereby to cause any obstruction of this canal.

When the plugs are removed, if the wound is not sufficiently healed, the nostril should be thoroughly irrigated with the sodium chloride and sublimate solution, dried and dusted with iodoform powder, and the antiseptic plugs again inserted. It is not necessary at this time to use plugs that fit so tightly as at the first dressing, since the danger of bleeding has passed. The second plugs can almost always be allowed to remain until the wound is sufficiently healed to require cleansing only, which should be done two or three times a day with an antiseptic wash or spray. In cases in which both nostrils require operations, if they can be dealt with separately, it is best to operate on but one at a time, performing the operation on the second after the first has healed. Thus, by obstructing but one nostril at a time, nasal respiration is maintained as far as possible.

It will be seen that in this method of rendering the nasal passages thoroughly aseptic, I have not employed any new antiseptic or aseptic agents. But this form of dressing for the purpose of hermetically sealing the passages after they have been rendered thoroughly aseptic, has not hitherto been advocated or employed.[1]

The advantages of this procedure over the open method of treatment are very great.

1. It effectually prevents hæmorrhage. In certain cases in which extensive operations are performed, not more than a slight oozing of blood from the wounded surface can take place, on account of the firm and uniform pressure which this flat packing exerts. In all cases this method of arresting nasal hæmorrhage is far superior to the old method of plugging the nose posteriorly, or packing it anteriorly with cotton or similar substances.

2. All purulent formation is prevented. Septic

[1] Dr. Kitchen, of New York, has proposed a method of plugging the nose similar to that which I have described (Medical Record, January 7, 1888). He does not, however, emphasize the antiseptic uses for which this form of dressing is especially adapted.

absorption cannot take place, and, therefore, constitutional disturbances, except those that are the immediate results of the operation or the effects of the cocaine, are averted.

3. It enables the operator to complete at one sitting all the operative procedures required in one nostril, however extensive, with no subsequent disturbance to the patient greater than that which commonly results from a slight operation when the open method is adopted.

4. The inconvenience of frequently cleansing or irrigating the nostril with an antiseptic solution after the operation is avoided; for this dressing, if properly placed in the nostril, can be allowed to remain from four to six days, or even longer, according to the thoroughness with which the wound and the dressing have been made aseptic.

5. Under this form of dressing the wound heals readily, quickly and smoothly. Granulations are not permitted to spring up, so that when the parts are healed the passage remains free and unobstructed; and when opposite walls of the nostrils are wounded, the liability of those surfaces to grow together, or of fleshy bands to form across the cavity, is entirely prevented.

6. It may be mentioned also that this method of plugging the nose in case of epistaxis is much less likely to cause aural complications than is the ordinary method of plugging the posterior nares.

7. In the dressing of fractures of the nose or operations for correcting deviations of the septum, this form of dressing is superior to any other for the purpose of holding the parts in place; and when applied it is not necessary to replace it or to disturb the wound for a number of days, so that the union of the fractured parts is not interfered with, as is the case with the ordinary methods of holding the parts in place by metallic clamps, hard rubber plugs, and similar devices.

In conclusion I would call attention to the importance of such a form of dressing after the employment of the galvanic cautery. The actual cautery is generally believed to be the best sterilizer, and is often used for searing the surface of wounds after cutting operations in order to prevent hæmorrhage and the absorption of septic material. Gerster says: "The actual cautery is the most effectual sterilizer."[1]

This is true so far as it relates to the destruction of the germs with which the cautery comes in direct contact; but it must not be forgotten that a burned mucous surface is the most active absorbent surface, and the most productive of copious purulent formations.

In the case of a simple burn of the skin, if it is allowed to remain exposed to the atmosphere extensive inflammatory action will set in, owing to the active infection of the surface by germs. On this account it is rare for even slight cauterization of any part to be unattended with swelling and constitutional symptoms far in excess of those which usually attend a cutting operation upon the same region. In the treatment of all burned surfaces, therefore, the most thoroughly aseptic precautions are of the utmost importance.

Looking at this subject from a scientific point of view, when we consider the large number of varieties of benign and of disease-germs which are found in the nasal secretions, and when we consider that the tissues of the nasal passages are the most rapid absorbents of the mucous surfaces of the body, it would seem to be inexcusable to treat a wounded surface in the nose by the open method, and thus to afford a feeding-ground for the numerous bacteria which with every breath are deposited upon this exposed surface.

The form of dressing by means of intra-nasal plugs prepared and applied in the way that has been pointed out, is therefore recommended as a practical mode of dressing intra-nasal wounds, and one which fulfils all the aseptic precautions required in every branch of modern surgery.

[1] Antiseptic Surgery, p. 3. New York, 1888.

ORIGINAL LECTURES.

LUPUS VULGARIS.

A Clinical Lecture
delivered at Freedman's Hospital, Washington, D. C.

By N. F. GRAHAM, M.D.,

PROFESSOR OF THEORY AND PRACTICE OF SURGERY AND CLINICAL SURGERY, MEDICAL DEPARTMENT, HOWARD UNIVERSITY; CONSULTING SURGEON TO FREEDMAN'S HOSPITAL.

[Reported by E. A. Balloch, M.D., Lecturer on Minor Surgery, Medical Department, Howard University.]

Gentlemen: The discovery of the bacillus tuberculosis by Professor Koch and his recent utterances in regard to curing or alleviating the diseases caused by this microscopic organism, give renewed interest to every form of tubercular disease.

The hopes of a great multitude of victims of tuberculosis in every form are now hanging upon the results of the various trials of the new remedy which are being made, with more or less accuracy as to detail, both in Europe and in this country.

I take pleasure, therefore, in bringing before you, today, three cases of lupus vulgaris, the diagnosis in two of which has been placed beyond question, both by careful microscopic examinations and by the results of Koch's lymph.

All the signs, objective and subjective, which characterize the disease in question, are present in the cases now before you. The history of the development in each case has been obtained by Dr. Balloch, and I will give a brief *résumé* of them:

CASE I. *Lupus exulcerans.*—L. D., colored, male, aged thirty years. First noticed the disease three years ago. Made its appearance as a small pimple. Owing to intense itching the pimple was kept irritated by constant scratching. From this focus the disease spread until it reached its present proportions. It now affects the nose, upper lip, and both cheeks, which are in a state of superficial ulceration, accompanied by a discharge of pus and blood. Glands of neck much enlarged and very hard.

CASE II. *Lupus hypertrophicus.*—L. J., female, colored, aged twenty-five years. States that disease began "when she was a little girl," probably about the age of puberty. Began in the form of one or two small pimples, which would dry up and be followed by others more numerous. Began on nose and caused an ulcer which slowly spread. No pain. Scabs would form and drop off, leaving a raw surface. Always a profuse discharge. After the disease had continued a year or two she received an injury to the face which caused a more rapid spread of the ulceration.

Her appearance now is typical. The nose is enormously swollen and warty. The disease also involves the upper lip and face, causing blindness by reason of patient's inability to open her eyes, owing to swelling. All the parts involved are in a state of active ulceration, and pour out a profuse discharge of pus and blood.

FIG. 1.

FIG. 2.

CASE III. *Lupus exulcerans* (?).—E. B., female, aged forty years, colored. Duration of disease nine months. First noticed as a small pimple on nose, which was kept irritated by constant scratching, finally resulting in a spreading ulcer. No pain. Always had nasal catarrh, with constant secretion of mucus. Now has superficial ulceration of nose and neighboring parts of both cheeks. Cartilage of nose gone. Discharge of blood and pus.

You will understand that the descriptions apply to the cases as they were before the use of the lymph, and, in order that you may have a good idea of the extent of the disease in each case, I will hand around these photographs, kindly taken for me by Dr. A. H. Lee on the day before the injections were begun.

All these cases have been under treatment by the Koch method. The lymph used was some of that sent personally to Dr. John S. Billings by Prof. Koch, so that there can be no possible doubt as to its purity. The injections have been made by Dr. Wm. M. Gray, of the Army Medical Museum, which is a sufficient guarantee that they have been accurately and scientifically carried out.

Dr. Gray has followed his own methods, and will shortly publish the full details. Suffice it to say that he has used much larger doses than other American experimenters, and his results have been correspondingly better, approaching more nearly those obtained by the German investigators than any I have seen.

The results in two of the cases have been marvellous. The improvement in Case II. is particularly remarkable. You would hardly recognize her as the same person. The huge, warty protuberance, which she formerly called her nose, is gone, and in its place she has a nearly natural nose, covered with soft, velvety, pink skin, without a trace of ulceration or discharge. She can once more see the light of day, and, as you perceive, presents but few evidences of the existence of her former trouble. In Case I. the improvement is not so apparent at first sight, but is none the less real. The discharge has ceased and the parts are covered by dry, brownish scabs. These will soon drop off, leaving healthy skin; in fact, this healthy skin is now visible between the crusts. The cervical glands have lessened in size one-half and are softer and altogether more normal to the touch. In Case III. no material improvement is manifest. The ulceration looks cleaner, brighter, and more healthy, and the discharge has nearly ceased, but this is all we can say. She has never exhibited any decided reaction to the lymph, while the other two cases showed marked reaction, the temperature in Case II. going at one time to 105° F. and remaining there for twenty-four hours.

But it is more of lupus in its clinical aspects that I desire to speak to-day. Lupus is now believed to be one of the forms of cutaneous tuberculosis due to the bacillus tuberculosis. The variety under consideration, and with which at least two of these patients are affected, is known as lupus vulgaris.

It differs from lupus erythematosus in the important fact that the latter affects the skin and subcutaneous cellular tissue only, and never goes on to a stage of softening or ulceration. Also the latter never affects the

deeper tissues, soft or hard, as muscle, tendon, cartilage or bone, while lupus vulgaris in its destructive march is not limited even by bone.

Lupus vulgaris commences with deep-seated points in the skin, from the size of a pin's head to that of a split pea. You will recall that the history of each of these cases shows a beginning as a small pimple. The color varies in accordance with the complexion of the individual. In the white it is orange-red or a shade of brown, and in the dark-skinned races, simply a tint lighter than that of the natural skin.

These points or centres of inflammation are sharply defined from the beginning. At a later period they become elevated above the surface, to form distinct nodules or tubercles. The disease may spread from a focus, peripherally, and so extend until a large patch is formed, or several tubercles may appear in a patch of skin which, in time, run together to form sores of varying sizes. Case II. illustrates this mode of spreading. The extent of involvement of the skin and deeper tissues gives rise to a number of clinical varieties of lupus vulgaris, such as lupus maculosus, lupus exulcerans, lupus serpiginosus, lupus exfoliaticus, lupus hypertrophicus, and so on, as long as the adjectives hold out. Time will not permit of a consideration of all these varieties, so we will confine our attention to the cases before us.

Cases I. and III. I had formerly considered to be cases of lupus exulcerans. The result of the injections in Case I. confirms this diagnosis, while it renders it doubtful in Case III. To the eye both had the same general appearance. In this variety of lupus vulgaris there is evidence of cicatrization under the skin at points, the result of infiltration of the subcutaneous tissue by the disease. At other points, by reason of the intensity of action as well as on account of the irritation to which the surface is necessarily subjected, you will find necrosis of the skin and a destruction of deeper tissues, not even sparing cartilage. This is what I had thought to be going on in Case III.

Ulceration soon takes place, and the surface of the ulcer will be covered by yellow and brown crusts, which show a secretion. I wipe off the secretion in Case III., and the granulations are plainly seen. As a rule, in cases of lupus the granulations are soft and friable, so that they are easily scraped away with the nail or curette. We have here an ulcer which has slowly progressed, destroying the deeper structures until the end of the nose is nearly gone. The granulation-tissue found in this disease is different from that found in healthy, constructive inflammation, in that it is liable to, and generally does proceed to, destructive ulceration, and not, step by step, to repair, as is the case in healthy sores.

Case II. presents the variety of lupus vulgaris clinically known as lupus hypertrophicus. In this form of the manifestations of lupus, the products of inflammation thrown into the connective tissue at the base of the nodules or tubercles overbalance the process of necrosis on the surface, and large and prominent granulations are heaped up in masses.

These masses are sometimes covered over with a thin skin and remain as warty-looking growths; whilst in other, and by far the larger number of cases, they remain soft and fungous, easily broken down and bleed at the least touch. The nodules, even when hard to the touch, are very friable, and can be penetrated by an ordinary probe or scraped out of their beds by the lightest touch of the curette, leaving well-defined excavations with normally solid margins and bases of sound tissue, or, more likely, tissue infiltrated with the products of inflammation. This, in itself, is a crude factor in making a diagnosis in a case of lupus.

The disease may occur in any part of the body, but has a decided preference for the face first, and next the extremities. In each of our cases it happens that the face is the part involved. As a general rule, the extent of surface involved is not large, varying from a patch the size of a dime to one, two, or three inches in diameter. Exceptionally a large surface may be affected, even to the whole side of the face or the entire thigh. Case II. is one of these exceptional cases.

The first signs of lupus manifest themselves early in life, from the third to the tenth year as a rule. The beginning, however, is generally so insignificant that it often escapes observation until about the age of puberty, or later, when new and increased action becomes manifest and the disease spreads, though slowly, with great persistence. This factor has been made use of as a means of diagnosis.

Until the discovery of the bacillus tuberculosis, the etiology of lupus was a matter of speculation, but it is now generally believed and accepted by pathologists, as I have stated, that it is simply tuberculosis of the skin, induced by the same bacilli found in tubercle in other portions of the body. The best and surest means of diagnosis, therefore, is in the examination of a portion of the suspected tissue by the microscope, when, if bacilli are found, the fact that the disease is lupus may be accepted. The bacilli are found in little pockets beneath the connective tissue, and in examining tissue one must, therefore, go rather deeply into the ulcer to get a proper specimen. Comparatively few professional men are supplied with the means of making this diagnostic test, and still fewer have the leisure; so, as a result, the majority must depend upon the ordinary clinical signs presented by the disease.

Lupus is of interest from a surgical point of view, for the reason that it is often mistaken for other diseases. It may be confounded with certain late manifestations of syphilis (tubercular syphiloderm), with epithelioma, with eczema, or with psoriasis. From syphilis it is differentiated by the fact of its very early appearance and of the area involved, as compared with the hereditary manifestations of syphilis. In lupus the ulceration is, as a rule, limited to one region, is comparatively superficial, has a slight and not offensive discharge. The margins of the ulcer are not well defined, it develops slowly, is covered with scales, and in the early stages, from the chronic nature of the malady, there are no constitutional symptoms.

In syphilis the ulcers are deep, with sharply-defined borders, attended by an abundant and foul discharge; they develop rapidly, and are often found on many parts of the body at the same time. Frequently, also, there is suppuration of glands and disease of bones. This, with the history of the initial lesion, which is usually obtainable, in connection with the speedy benefit obtained

from treatment by the iodine preparations and mercury, makes the diagnosis of syphilis quite conclusive.

The differential diagnosis between lupus and epithelioma is somewhat easier. Lupus is generally found in young persons; is not painful; is slow in its progress; without marked ulceration, and usually affects the skin of the face. Epithelioma is more commonly found in the old or middle-aged; is very painful; grows rapidly (as compared with lupus), with marked, circumscribed induration, and forms a deep, discharging ulcer.

Eczema may be diagnosed by the fact that it never proceeds to true ulceration; that it is hard and firm, and cannot be penetrated by the probe nor scraped out of its bed, like lupus. Eczema spreads to neighboring parts peripherally, by a uniform inflammatory infiltration; it is liable to fissure and crack, and there is burning heat, with itching and pain.

In making the diagnosis between lupus and psoriasis you will remember that in the latter, we have the bright red patch, profusely covered with pearly scales, the removal of which shows numerous small blood-points. There is, too, a more general distribution of psoriasis over the body, and it is more liable to attack the extensor surfaces of the limbs.

In the matter of treatment, nothing could better show the uncertainty of the effect of drugs on this disease than the great number that have been recommended and tried; a few with benefit, but the greater number without any effect. I have always placed some reliance upon the internal administration of arsenic in the form of Fowler's solution, beginning with five drops three times a day, and increasing until ten, or even fifteen, drops are taken three times daily. I continue this treatment a long time, going back, at stated intervals of four or five weeks, to the minimum dose, and again increasing as before.

Cod-liver oil does good, and it is best given in the form of an emulsion, of which there are a number of most palatable ones on the market.

Suitable and sufficiently nourishing food should be allowed the patient, and his body should be kept warm and dry.

As to topical remedies for the cure of lupus I have but small faith in any of them. If the part affected be small, its complete destruction by caustics might be followed by good results. When practicable, removal by the knife is easy and the method most tempting to the surgeon. When thoroughly extirpated in this way the results are very good, although there is a liability to return sooner or later.

Another method is by linear scarification, which has for its object the division, in all directions, of the vessels, and, in this way, the starvation of the lupus by cutting off its blood-supply. Inflammation is also excited in the sound tissue, causing the separation of the necrosed tissue, and leaving a healthy sore, which will heal up in the ordinary way.

Of course, if the lymph treatment is capable of accomplishing all that we hope, and if it will effect a cure in all, or a majority, of the cases of this disease, the matter of the treatment of lupus will become easy, and no other methods, such as those I have spoken of, will, in the future, be required.

In the cases before you, the results, so far, are most encouraging. The only question is as to the permanence of the cure.

However, gentleman, even if the lymph treatment should be successful, many of you will, doubtless, practise your profession in localities where its benefits may not be obtainable. It is in view of this that I have been particular in describing other modes of diagnosis and treatment, upon which you will probably have mainly to rely.

PERSISTENT PAIN AFTER LAPAROTOMY.

A Clinical Lecture,
delivered at the New York Polyclinic.

BY HENRY C. COE, M.D.,
PROFESSOR OF GYNECOLOGY.

GENTLEMEN: These two patients belong under the same category and are of peculiar interest to me as illustrating a point on which I have laid considerable stress.

CASE I.—This young woman states that she was operated upon over a year ago on account of severe dysmenorrhœa. She did not leave her bed for seven weeks, which fact, together with the appearance of the cicatrix of the abdominal wound, would seem to show that her recovery was retarded by some complication, of which she is unable to give any clear account. She only knows that she has not menstruated since the operation and that instead of the periodical pain which she suffered before, she has now a constant pain in the lower part of the abdomen, associated with obstinate constipation and colicky pains in the bowels. The patient is positive that the pains are worse than they were before the operation. She is naturally hyperæsthetic, but I can find no particularly sensitive spot around the uterus, which is small, anteverted, and fairly movable. No painful indurations can be felt in the usual location at the uterine cornua. Pressure above the symphysis causes considerable pain. Taking into consideration the history of the case, together with the negative results of the examination, I infer that the patient had localized peritonitis after the operation, which resulted in the formation of intestinal adhesions which hinder and render painful the peristaltic movements. Due allowance must be made for the neurotic element.

CASE II.—This patient I have had under observation since her operation, nearly three years ago. During that period she has not menstruated, but has rarely been free from an intense congestive headache, which has made her life miserable. I was unable to relieve her, but she is now somewhat better, though still far from well. Her ovaries and tubes were removed for the relief of dysmenorrhœa, though they were not much diseased. Her convalescence was uninterrupted. For many months she suffered from pelvic pains, and you see, when I make pressure, that the uterus and its surroundings are still quite sensitive to the touch.

These cases, and a similar one which you saw at the last lecture, are worthy of your careful consideration, as they show the possible after-effects of laparotomy of which you should not lose sight. As a rule, you only witness the operation, and are impressed with its brilliant and successful performance by the skilful operator. You probably seldom think of the subsequent history of

the patient; if you hear from her at all, you merely learn that she made a good recovery and was discharged "cured" at the end of four or five weeks. Now, this is the least important part of the history, as you will find when you come to operate on private patients. Be careful that you do not promise too much. I refer, of course, to cases in which you expect to remove the moderately diseased adnexa for the relief of pain. It is remarkable what a change has taken place in our views during the past four or five years. Now the removal of tubes and ovaries not seriously diseased is regarded as rarely justifiable; not one empirical operation is now done where twenty were performed a few years back. But even when laparotomy is clearly indicated and is skilfully performed, where no complications are present and the convalescence is normal and without elevation of temperature, there still remain a certain proportion of cases (by no means insignificant) in which it is a question if the remedy is not worse than the original disease. Such patients are afflicted with persistent pains in the pelvis, metrorrhagia, cerebral congestion, vesical irritation, and various neuroses, which are either extremely difficult or quite impossible to relieve. I need only call your attention to the cases which you see here one, two, or three years after operation to assure you that this picture is not an imaginary one. Last winter I operated upon two patients before the class in the same afternoon. Both were young women upon whom abdominal section had been performed by prominent surgeons a year or more before, followed by normal convalescence, and yet both had such severe and persistent pains that a secondary laparotomy was necessary in view of the absence of relief from palliative treatment. In one case, in which both ovaries and tubes had been removed, the pain was due to a firm intestinal adhesion, which was separated. The patient was much relieved and has since married. In the other case only one ovary and tube had been extirpated for the relief of pain which continued after this operation. I removed a pyosalpinx and small ovarian cyst, and broke up some pelvic adhesions. This patient has not only failed to be relieved, but in addition suffers from profuse metrorrhagia at irregular intervals, as well as constant severe pain at the site of the stump which I left. The latter is enlarged and is extremely sensitive. I examined her under ether a few weeks ago, having previously introduced tents, explored the uterine cavity thoroughly and removed a few "fungosities," but all to no purpose; she continues to suffer and to flow as before. Two other patients (perfectly simple cases) operated upon last winter, who have been kept under constant observation, give a precisely similar history. We do not understand why these phenomena occur; but they prove most forcibly that removal of the adnexa does not always cause a sudden and miraculous disappearance of the symptoms for the relief of which the laparotomy was performed.

Now, I trust that you will understand my reasons in calling your attention to the subsequent history of these cases. It is not with any desire of belittling the results of abdominal surgery. We have every reason to feel proud of the work of American laparotomists, and of the conscientious way in which it is done. Only extremists pretend to cure advanced disease of the ovaries and tubes without resort to the knife. What I wish you to remember is that while life may be saved, absolute recovery from pain, which is the chief desideratum to the patient, can never be positively guaranteed by the surgeon, nor can he promise that the disturbances incident to the sudden establishment of the menopause may not be profound and lasting. It is only by keeping our patients under careful observation for years, not weeks or months, after the operation, that we can arrive at any scientific estimate of the value of laparotomy as a curative measure.

MEDICAL PROGRESS.

Liniments for Pruritus.—*La Semaine Médical* gives the following liniments for pruritus:

℞.—Pure resorcin . . . . 1 drachm.
Glycerin . . . . 2 drachms.
Water . . . . . 4 ounces.

Mix and label "To be Used Externally;" or,

℞.—Menthol . . . . 3 drachms.
Glycerin . . . . 2 drachms.
Water . . . . . 4 ounces.—M.

This is to be labelled "Use Externally," and is to be shaken before using.

Finally, the following mixture may prove of value:

℞.—Ichthyol . . . . 1 to 3 drachms.
Glycerin . . . 2 drachms.
Alcohol } of each . . 2 ounces.—M.
Water }

Use externally.

Trinitrine for Angina Pectoris.—Trinitrine or nitroglycerin has been very largely used, particularly in France, in the treatment of angina pectoris, and is without doubt a valuable remedy for this disease. According to the studies of HUCHARD, POTAIE, and HERARD, who have studied its physiological action particularly in relation to its use in angina pectoris, the drug is a vaso-dilator resembling very closely nitrite of amyl. BOCQUILLON uses it in the following manner:

℞.—Alcoholic solution of trinitrine
(1 per cent.) . . . . 30 drops.
Distilled water . . . . 10 ounces.—M.

Two teaspoonfuls morning, noon, and night.

For subcutaneous injection he uses the following solution:

℞.—Alcoholic solution of trinitrine
(1 per cent.) . . . . 30 drops.
Cherry-laurel water . . . 3 ounces.—M.

Twenty minims of this may be given hypodermically.

Salt Solution in Acute Anæmia and Cholera Infantum.—In the *Archives of Pædiatrics* for March, 1891, the following translation is to be found: A six-tenths of one per cent. solution of salt was first used in four cases of cholera infantum, two dying and two recovering. To the solution was added a little alcohol. The solution was sterilized, and kept at a temperature of from 39° to 40° C. The apparatus used was a glass funnel with a

rubber tube, about three feet long, to which a cock was attached, the end of which fitted into the canula connected with a small trocar. In place of the foregoing, one may use for children a small syringe, holding about five drachms, to which a long aspirating needle may be attached. The transfusion was made into the skin of the abdominal wall, and absorption was assisted by massage over the point of injection. For infants, from 1 to 2 ounces is a sufficient quantity for injection, and it could be repeated if collapse rendered it necessary. No unpleasant phenomena are likely to accompany the injections. After the operation the head should be lowered, the feet raised, elastic bandages wrapped around the child, and other excitants used as occasion calls for them. The same treatment may be used in collapse following extensive hæmorrhage, either in children or adults.

Treatment of Eczema in Children.—In the *Revue Mensuelle des Malades de l'Enfance* for August, 1890, Sallfeld gives the following treatment for eczema: Some interesting considerations are presented concerning the treatment of eczema in children, which differ essentially from those which are usually adopted in adults. Of all varieties of local eczema which are developed under the influence of external causes, the most important in children, in the author's opinion, is intertrigo. It is particularly common in fat children, and is frequently located near the margin of the anus, in the inguinal folds, in the folds of the neck, and in the vicinity of the chin. Intertrigo thus localized is readily cured by the use of bland and inert powders, but if the disease includes large portions of the surface of the body, the local treatment should be supplemented by change in the diet, and if diarrhœa exists, it should be energetically treated as well. If the skin is the seat of an intense inflammation, cold compresses should be used for several days which have been moistened with a mixture composed of equal parts of a five-per-cent. solution of boric acid and the officinal solution of subacetate of lead, an ointment of boric acid being used after the former preparation has been discontinued. If the skin is very moist it should be dried with a suitable absorbent powder before using the ointment. In the treatment of eczema of the face and scalp which is so common in fat children, it is well to diminish the quantity of nourishment, to eliminate fatty materials from the diet, and to combat habitual constipation with appropriate enemata. The crusts upon the head and face should first be softened with olive oil, and after they have been removed the surface should be anointed with the following ointment:

℞.—Boric acid . . . . 45 grains.
Zinc oxide. . . . . 75 "
Vaseline } of each . . 450 " —M.
Starch }

If there is generalized eczema of a scrofulous character, the organs of digestion must be carefully interrogated, and if the alimentation is insufficient, it must be supplemented with cod-liver oil combined with phosphorus or arsenic. The local treatment should be limited to the use of vaseline inunctions, followed by the use of bland powders upon the skin. Applications of tar preparations should be avoided, as they only irritate the skin. The following formula may be used with advantage:

℞.—Ammoniated mercury . . 30 grains.
Peruvian balsam . . . 75 "
"Wilson's ointment" . . 450 " —M.

—*Archives of Pædiatrics*, March, 1891.

Cremasteric Reflexes in Chloroform Anæsthesia.—An excellent test for surgical anæsthesia by chloroform exists in the cremasteric reflex. When it is lost sensation has disappeared.

The Dose of Salol for Infants.—*Lyon Médical* states that the proper dose of salol for a child of six months is 3 grains, for one of two years 6 grains, and for one of five years 15 grains. [These doses are certainly as large as they should be.—Ed.]

The Action of Saccharine on the Heart.—Loutzensko has studied the action of saccharine upon the heart of the frog, and finds that when 1½ grains of a two-per-cent. solution of saccharine with bicarbonate of sodium is injected into a frog the animal in one hour appears to be better. It is insensible to the touch, but pinchings provoke feeble reflexes. The heart is finally arrested in diastole, but if pinched will once more begin to contract. Electrical stimulation also produces these contractions of the heart. In doses twice or thrice as large as that named, Loutzensko found that saccharine causes irregular cardiac movements. The effect of the drug upon the vagus nerve after such doses is very feeble.—*Revue Général de Clinique et de Thérapeutique.*

Treatment of Seat-worms.—Success in the treatment of cases of seat-worms depends upon the prolonged and constant use of a vermifuge or some active vermicide. The worms are generally attacked by means of injections, suppositories, or ointments. Of the injections, a favorite prescription is a solution of common salt in the proportion of 1 to 5. Sometimes sugar and water may be used, and an infusion of absinthium is employed by some French practitioners. Still others employ simply cold water. It is said that West and Barthez recommended astringent injections composed of the perchloride of iron and lime-water, as follows:

℞.—Lime-water . . . . 6 ounces.
Perchloride of iron . . 10 drops.—M.

And also,

℞.—Lime-water . . . . 4 ounces.
Decoction of marshmallow . 1 ounce.—M.

For the same purpose Trousseau prescribed suppositories of tannin, made up as follows:

℞.—Tannic acid . . . . 15 grains.
Cocoa butter . . . . 1 drachm.—M.

Other physicians have employed injections of asafœtida, and many have found the following treatment useful:

℞.—Alcoholic extract of senna leaves 30 grains.
Boiling water . . . . 4 ounces.

Make an infusion and sweeten with syrup of wild cherry, 4 drachms. This may be given to an infant

of four or five years as a laxative, and if it does not act may be followed by from a half to one drachm of the sulphate of magnesium. After this an injection may be given composed of 1 ounce of powdered quassia chips to 1 pint of water, or of carbolic acid in the proportion of from ½ to 1 drop to 4 ounces of water. An emulsion of calomel may be employed composed of calomel 3 grains and mucilage of flaxseed 4 ounces.

GUERSANT is said to employ sulphuretted potash 2½ drachms, water 4 ounces; while ROSSBACH finds naphthaline of great service, and administers it as an injection as follows:

℞.—Naphthaline . . . . . 15 grains.
Olive oil . . . . . 1½ ounces.

This quantity may be doubled or tripled in adults. Sometimes he prefers to use naphthaline from 2 to 10 grains and decoction of marshmallow 6 ounces. If the worms inhabit the lowest portion of the intestine it may be well to follow the treatment of Cruveilhier, viz.—to employ mercurial ointment or to rub into the anus an ointment composed of calomel 8 grains and cocoa butter 1 drachm.

TROSSEAU is said to employ the following suppositories:

℞.—Calomel . . . . . 1 drachm.
Vaseline . . . . . 3 drachms.

When the worms inhabit the higher portions of the rectum they will probably resist all therapeutic measures unless they be attacked through the stomach. Under these circumstances it may be well to employ calomel and santonin, of each ½ grain, which is to be administered early in the morning in order that the calomel may act by evening. This dose is the proper one for a child of two to three years.—*Revue Général de Clinique et de Thérapeutique.*

Pill for Tuberculosis.—According to *L'Union Médical* CHAUVIN uses the following pill in tuberculosis:

℞.—Iodoform . . . . . ¼ grain.
Dover's powder . . . . 1½ grains.
Extract of gentian enough to make a pill.

Give one pill three times a day immediately after meals.

Cholagogue Powders for Hepatic Colic.—In the *Revue Général de Clinique et de Thérapeutique* the following treatment for the relief of hepatic lithiasis is given, based upon the fact that BINET and others have found that the benzoate and salicylate of sodium act as cholagogues. The nux vomica in the prescription aids in regulating the bowels and in relieving anorexia and dyspepsia.

℞.—Benzoate of sodium } of each . 75 grains
Salicylate of sodium }
Powdered nux vomica . . 7 " —M.

This is to be divided into 20 powders, of which the patient should take 1 three times a day for two months.

Treatment of Typhoid Fever.—The *Revue Général de Clinique et de Thérapeutique* gives the following method used by TEISSIER in the treatment of typhoid fever. Morning and night a powder composed of 5 grains of alpha-naphthol and 3 grains of salicylate of bismuth is given. In addition four cold injections are used, at intervals of twenty-four hours, with the object of increasing diuresis. After the midday injection he prescribes the following tonic and antipyretic mixture:

℞.—Extract of cinchona . . . 1 drachm.
Sulphate of quinine . . . 15 grains.
Tincture of valerian . . . 1 ounce.—M.
Teaspoonful at a dose.

Teissier also applies cold compresses to the head and abdomen, and the patient is allowed 10 ounces of Bordeaux wine and one and a half pints of milk or broth in the twenty-four hours. He employs alpha-naphthol in preference to beta-naphthol because the latter is very much more poisonous; thus, to produce poisoning in a man of ordinary weight it is necessary that twice as much alpha-naphthol be given as of beta-naphthol. In consequence it is possible to give larger doses of alpha-naphthol without danger, and obtain thereby a greater degree of intestinal antisepsis. The cold baths which he recommends augment, in his opinion, the elimination of toxic substances in the urine, and the naphthol stops their production in the intestine.

The Employment of Kola Nut.—HUCHARD gives the following prescription in the *Revue Général de Clinique et de Thérapeutique* for the administration of kola nut:

℞.—Tincture of kola . . . 1 ounce.
Tincture of coca . . . 1 "
Tincture of squills . . ½ "
Tincture of digitalis . . 2 drachms.
Simple syrup . . . . 2½ ounces.
Red wine . . . . 1 pint.—M.

Allow the sediment to settle, and then decant and filter. Two or three teaspoonfuls of this mixture may be given each day for eight or ten days in cases of cardiac disease requiring tonics. In other cases the following may be employed:

℞.—Fluid extract of kola } of each 6 drachms.—M.
Fluid extract of coca }

A small teaspoonful should be taken after luncheon, with a little simple syrup or Malaga wine. This mixture should not be given at night, because the kola produces insomnia in some patients. The dose of it should be from 20 to 30 drops three times a day: as, for example, at 8 o'clock in the morning, at midday, and at 4 o'clock in the afternoon.

Treatment of Seborrhœa of the Scalp.—LIEBREICH employs the following prescription in the treatment of seborrhœa of the scalp:

℞.—Spirits of ether . . . . 1½ ounces.
Tincture of benzoin . . . 1 drachm.
Vanillin . . . . . ½ grain.
Heliotropin . . . . 3 grains.
Oil of geranium . . . 2 drops.

Mark "For external use, combustible."—*Wiener medicinische Presse.*

Current Literature.

SATURDAY, MARCH 28, 1891.

NATURE AND PATHOGENY OF MUSCULAR ATROPHIES FOLLOWING LESIONS OF THE ARTICULATIONS.

Duplay and Cazin, in a paper upon this subject (*Archives Générales de Médecine*, January, 1891), mention some of the numerous theories which have been proposed from time to time to explain the pathogeny of muscular atrophies consecutive to articular lesions, and which have, to-day, been very properly abandoned. Among these they recall the mechanical theory of Roux, in which the atrophy is explained by a mechanical distention of the synovial membrane by a serous effusion, but which does not hold good in cases of atrophy occurring independently of intra-articular effusion; the theory of functional inactivity, which has also been controverted by numerous instances of atrophy occurring with no immobilization of the joint; the theory of the propagation to the muscles of the articular inflammation, which will not apply to amyotrophies developed at a distance from the joint, or generalized in an entire member, nor does it take into consideration the rapidity with which these atrophies may appear; and, finally, the reflex vaso-dilator theory of Schiff, and the reflex vaso-constrictor theory of Brown-Séquard. While the general theory of to-day inclines toward the opinion of Vulpian, it is worth while, nevertheless, to make special mention of a theory conceived by Sabourin, and developed by several writers, more especially by Descosse (*Thèse de Paris*, 1880). According to this theory, which may be designated as the neurotic theory, the inflammation of the peri-articular fibrous tissues is propagated to the fibrous envelope of the muscular fasciculi, and from them to the neurilemma of the final nerve ramifications, from which the nervous element itself becomes altered. This theory, however plausible, has not been confirmed by any histological examination, and in the presence of the inadequateness of these various theories, the consensus of opinion remains with the reflex theory of Vulpian. This theory will suffice to explain the rapidity with which the atrophy frequently appears, and is in accord with the results of clinical observation. It is also supported by microscopical examinations of the muscles, which always present the characteristics of a simple atrophy. Nevertheless, for this theory to be definitely adopted, it is necessary that careful and sufficiently numerous experiments be made to establish positively the condition of the cord and of the nerves in these amyotrophies of articular origin. In most of the cases observed hitherto no appreciable lesion of the cord could be discovered, but M. Klippel (*Bulletin de la Société Anatomique*, November, 1887, and January, 1888) reported to the Anatomical Society a case of chronic arthritis of the right knee with degenerative atrophy of the crural triceps, in which there were some alterations in the cells of the anterior and posterior horns of the cord of a granulo-fatty nature. Professor Charcot was, therefore, led to the opinion that there may be two degrees of the articular amyotrophies: the one, in which the spinal affection is purely dynamical, and expresses itself by a simple atrophy of the muscular fibres; the other, more grave, in which the spinal affection is characterized by appreciable organic lesions, and expresses itself in the muscles by degenerative lesions.

Duplay and Cazin have performed a number of experiments upon dogs and rabbits, in which they produced an inflammation of the joint by means of injections of tincture of iodine, of solutions of silver nitrate, by the thermo-cautery, or by violent torsion, tearing the lateral ligaments. In every instance there were pronounced evidences of atrophy, as shown both by mensuration and weighing. The histological examinations of the muscles constantly revealed the characteristics of simple atrophy without any appearance of granular degeneration of the striæ. The substance of the spinal cord was found to be intact in every portion, as were also the spinal roots. In no case were the observers able to note any appreciable change, either in the size of the anterior horns, or in the number or size of the nerve-cells, or in their form. The only lesions which they were able to prove were found in the articular nerve filaments, which were the seat of an inflammation extending from the peri-articular tissues. They have drawn the following conclusions:

1. Amyotrophies secondary to lesions of the articulations consist in a simple atrophy of the muscles, as has already been indicated by most of the writers upon the subject.

2. This atrophy cannot be explained by a dynamic action resulting from a simple reflex due to an irritation of the terminal filaments of the articular nerves.

3. This pathogeny, clearly indicated by Vulpian, and accepted by a large number of writers, has never received, up to the present time, an absolutely rigid anatomo-pathological demonstration. The constantly negative results of their researches relative to the existence of lesions of the nerve-trunks, of the spinal roots, and of the cord, seem to the authors to constitute a definitive demonstration.

THE VARIETIES OF HYDROCELE.

Duplay mentions a large variety of hydroceles which may be encountered in the inguino-scrotal region, together with the means of differentiating them. It is an easy matter to distinguish the so-called "hydrocele by infiltration" from hydrocele with effusion, since the former is simply an œdema, and is not accompanied with fluctuation and transparency, while the tissues retain the imprint of the fingers. More difficult is the diagnosis between encysted hydrocele of the testicle and epididymis and vaginal hydrocele. The differences here consist in the variable connections which exist between the sac and the testicle. The effusion in hydrocele of the tunica vaginalis entirely surrounds the testicle, and the latter occupies a postero-

inferior position, and is a little internal to the tumor. This is the rule, but it is well to remember that in cases of inversion of the epididymis the testicle is found in front of the effusion. In encysted hydrocele there is a cyst which takes its origin between the testicle and the epididymis, either on a level with the head of the latter, or a little lower. This cyst increases in volume, little by little, until it conceals the testicle, but it always remains attached to the head of the epididymis by a point more or less constricted, as large as the thumb or two thumbs, and it is always possible to outline the gland, which is impossible when it is enveloped by an effusion.

It is necessary to distinguish several varieties of vaginal hydrocele, and to describe separately congenital hydrocele, and hydrocele in Dupuytren's pouch. In the fœtus there is nothing in the tunica vaginalis, and it is at the time of the descent of the testicle that a prolongation of the peritoneum is dragged down, constituting the serous cavity. Congenital hydrocele is that in which the peritoneo-vaginal prolongation is not separated from the large abdominal cavity. The liquid which the sac holds is then very easily reducible, and returns into the abdomen very rapidly when the passage is large. If, on the contrary, the passage is small, it may require some time to return all of the fluid. Hydrocele in Dupuytren's pouch is a second variety of congenital hydrocele. It is easy to confound this variety with bilobar hydrocele. The latter is that in which, owing to the resistance of the fibrous tunic of the pouch, a bridle is formed which divides the sac into two portions. Hydrocele in the pouch is a variety in which the peritoneo-vaginal conduit, instead of becoming obliterated after the passage of the cord, is closed only in its upper portion, this closure completely shutting off communication with the peritoneal cavity. If, under these circumstances, an effusion occurs into the tunica vaginalis, it will divide into two portions, the one occupying the cavity which extends from the base of the sac to the orifice of the canal, and the other an intra-canalicular dilatation. Occasionally the peritoneum is pushed back, and it then forms a subperitoneal sac, which may be felt in the iliac fossa. In some cases, vaginal hydrocele runs even to the external orifice of the vaginal canal.

Of hydrocele of the cord there are two varieties: in one, the cavity presents itself above the line of the cord, and evidently consists of the non-obliterated remains of the peritoneo-vaginal canal. It is seen as a small, resistant, transparent tumor, at a point more or less elevated above the passage-way of the cord. Some cysts of this kind at times descend to the lower portion of the pouch, and it is then possible to confuse them with ordinary hydrocele. On the other hand, the obliteration of the peritoneo-vaginal canal may take place in its lower portion, all the upper portion remaining patulous, and forming a serous cavity which may be taken for an hernia or an effusion. In this variety, which is very rare, the effusion descends along the inguinal canal, and forms a transparent, reducible tumor. This is, if we adopt the name given by Chassaignac, a peritoneo-funicular hydrocele.

Finally, there is hydrocele of the hernial sac, which may extend the length of the inguinal canal, and even reach to the base of the pouch. The hydrocele is a serous cavity filled with liquid; sometimes the intestine and omentum are absent, and there is no communication with the peritoneum, but at other times an organ is found in the sac which should be in the abdominal cavity. Hydrocele of the hernial sac does not descend to the base of the scrotum, and it is easy to recognize it. Nevertheless, the diagnosis between it and peritoneo-funicular hydrocele, or cysts of the cord, may be quite difficult.—*L' Union Médicale*, January 1, 1891.

HYDRASTIS CANADENSIS IN UTERINE HÆMORRHAGES.

Jules Bataud refers to the paper by Schatz, and to the recent theses by Cabanès and Pigache, which contain a *résumé* of the recent literature upon hydrastis. Bataud himself has studied the effects of hydrastis in four cases of uterine hæmorrhage which occurred in the wards of the Saint-Lazare.

The first case was that of a prostitute, twenty-seven years old, with secondary syphilis, who was unexpectedly arrested while street-walking, and was taken to Saint-Lazare. She was of a very nervous and impressionable temperament. Menstruation was regular, scanty, and accompanied with dysmenorrhœa. The patient had never had a child or a miscarriage, and, though she had been at the hospital a dozen times before, had never had uterine hæmorrhage. At the time of admission it was found that she had an enormous papulo-hypertrophic syphilide of the vulva and anus. On the night of admission she was seized with profuse hæmorrhage from the uterus, preceded by dysmenorrhœal pains, though she had menstruated only fifteen days before. The cause of the hæmorrhage was thought to be congestion of the ovaries and uterus, induced by the shock of her sudden arrest—such an effect is said not to be uncommon in patients brought to Saint-Lazare. An examination of the uterus and ovaries showed no cause for the hæmorrhage. The patient was given ten drops of fluid extract of hydrastis thrice daily, and the hæmorrhage ceased nine days after its first appearance. It is not clear from the text whether she took the hydrastis from the beginning of the hæmorrhage or not. The drug was continued for twelve days after the hæmorrhage had ceased. The following menstrual period continued only three days, and the flow was scanty as usual.

The second patient, a woman, twenty-one years old, was admitted for gonorrhœal urethritis and vaginitis, with discrete vegetations about the anus and vulva. Menstruation was regular and painless, lasting four or five days. She had had neither children nor miscarriages. While descending the stairs, one day after admission, she fell, striking her side over the region of the kidney. Two hours later she was seized with acute pain, and was obliged to go to bed. The same night very profuse and painful hæmorrhage from the uterus came on. There was a large ecchymosis in the left lumbar region. Forty drops of fluid extract of hydrastis were given

daily, in four doses. The next day pain and hæmorrhage were less, and in five days from the beginning of the administration of hydrastis, and in six from the time of the accident, the hæmorrhage had ceased.

In the third case, a woman, twenty-three years old, was admitted for syphilitic erosions of the mouth. Her menstruation had always been regular, scanty, and painless, lasting four or five days. She had had neither children nor miscarriages, and had never had menorrhagia or pain in the abdomen until three months before admission, when she rolled down stairs. This accident was followed by a sensation of heat and weight in her abdomen. Two days later menstruation set in, and was painful and much more profuse than normal, and continued ten days. In the interval between her menses the pains continued, and leucorrhœa developed. The last menstruation before admission was similar to the one just described. The uterus, vagina, and vulva were intensely congested. The dull curette disclosed no lesion of the endometrium. At the next menstruation the patient was kept in bed, and was given forty drops of fluid extract of hydrastis a day, beginning on the second day after the appearance of the flow. Menstruation lasted only seven days, and was less painful. The hydrastis was continued until the next menstruation appeared, which was not painful, lasting only five days, and was not as profuse as before. The congestion of the uterus is said to have been completely cured.

In the fourth case, a woman, thirty-nine years old, had been curetted eight months before for metrorrhagia due to an endometritis following abortion. The patient was cured by the operation, and menstruation became normal as to quantity and duration. On the second day of one of her menstrual periods, she had intercourse with her husband. Instead of the flow ceasing on the fourth day as usual, it continued for eight days longer, the patient suffering at the same time from sensations of heat in the pelvic organs. Bataud saw the patient on the tenth day of the hæmorrhage, and gave her four one-grain pills of hydrastin a day. The sensations of heat and the hæmorrhage diminished from the first, and ceased on the second day. Since then she has had two periods, each lasting only four days. Absence of endometritis was proved by curetting the womb. Hydrastin was used instead of the fluid extract of hydrastis, because of the disagreeable taste of the latter.—*Revue Médico-Chirurgicale des Maladies des Femmes*, Jan. 25, 1891.

TACHYCARDIA.

At a meeting of the Society of Internal Medicine of Berlin, January 19, 1891, Fraentzel spoke upon tachycardia. Since the first publications upon this disease the number of communications on the subject has increased from year to year. But a mistake has crept in. The habitual acceleration of the pulse which is present in the most diverse diseases of the heart, and which persists without recognizable change for years, should not be called tachycardia; this name should be reserved for the paroxysmal acceleration of the pulse—the essential paroxysmal tachycardia of the French, in which the disease occurs suddenly, and the pulse increases to 180 or 200 beats per minute.

The symptoms of tachycardia may be explained in two ways, as the result of palsy of the vagus, or from irritation of the accelerator fibres of the sympathetic. The latter cause is more easily understood, the symptom occurring as a spasm, or neuralgia, or a colic occurs. Although from the very beginning the tendency has been to attribute tachycardia rather to a palsy of the vagus than to a stimulation of the sympathetic, yet there are individual symptoms inexplicable by that hypothesis; for example the attack ceases if a blow is struck upon the thorax, and the paroxysm begins with pallor and dilatation of the pupils and subsides with such symptoms as sweating, flushing, and contraction of the pupils.

Excitement of the sympathetic is often cured by a dose of morphine, while in palsy of the vagus digitalis acts very well, or the attack may be cut short by compression of this nerve. Recovery, however, does not always occur so quickly; frequently the disease lasts for years, and then ceases suddenly.

The lack of a clear understanding of the cause makes the treatment uncertain. One should not, however, following Nothnagel, discard all treatment, on the ground that the attacks are not serious and that the disease will subside of itself. Fraentzel, for example, has seen several grave cases, in one of which there was extensive stasis in the lungs and veins, with cyanosis, orthopnœa, catarrh of the lungs, and swelling of the liver. Morphine was of no use in this case, but digitalis overcame the condition. The severity of the symptoms at that time convinced Fraentzel that the disease might result fatally, and since then he has discovered two fatal cases in the literature of the subject, and has subsequently seen one himself. His own case was that of a workman, thirty-five years old, who complained of dyspnœa, which occurred suddenly; he had formerly had cardiac palpitation. The heart was not enlarged, and its sounds were normal. On the day after admission, his pulse was 180, and the respirations 40. Digitalis caused the symptoms to disappear within twenty-four hours, and was just as prompt in several other attacks. Finally, however, this drug failed in a fresh attack, and the heart became visibly enlarged; the pulse was 172; cyanosis appeared, followed by death. At the autopsy both ventricles were found dilated, and the papillary muscles flattened. There was also fibrous thickening of the endocardium. The valves were intact.—*Münchener med. Wochenschrift*, February 3, 1891.

THE POLYURIA OF PREGNANCY.

M. Voituriez writes that the modifications observed in the urine during gestation are of frequent occurrence, and have for a long time attracted the attention of practitioners. According to Monod, 26 per cent. of all women suffer from urinary disorders during pregnancy. The cases have been divided into two great classes, namely, disorders of secretion

and disorders of excretion, among the former being placed the albuminuria of pregnancy. Independently, however, of the disorders of secretion which have been fully described by various writers (W. Duncan, J. Williams, Lecorché, and others) the great changes produced by gestation in excretion are especially worthy of note. These, as has been pointed out by Monod, most frequently depend upon a concomitant cystitis. Monod has divided these interesting and but little known forms of cystitis into several groups, according to the period of gestation in which they occur. Thus, he describes a cystitis appearing about the fourth week, which is characterized by intestinal pains, very frequent micturition, and the presence of a muco-purulent deposit. From a pathogenic point of view he explains this as due to the vascular relations existing between the bladder and uterus, relations which were well studied by Gillette in 1869. Physiologically, the menstrual uterine congestion reacts upon the bladder, and determines a vesical congestion; pregnancy in profoundly modifying the circulatory conditions of the pelvic organs acts in the same way, and the vesical congestion, in some respects normal, may terminate in a true cystitis. Secondly, he mentions a cystitis arising from retro-displacement of the uterus, which is but seldom encountered before the end of the third month of gestation. It results from fixation of the retroflexed uterus within the pelvis, and becomes very grave if the displacement is not quickly corrected. It is frequently accompanied by absolute retention, and later even by alterations in the walls of the bladder. This is the exfoliating or gangrenous cystitis recently investigated by Mm. Pinard and Varnier. Third, there is a form of cystitis observed toward the end of pregnancy, accompanied by tenesmus and frequently by retention of urine. It is due to the presence of the fœtal head which has passed the superior strait. In cases of narrowing of the pelvis, or when labor is prolonged, mortification of the wall of the bladder occasionally occurs following an arrest of the circulation from the excessive and continuous pressure. Finally, after labor, and particularly after instrumental interference, the so-called "post-partum retention of urine" is seen. This retention is analogous to that which Verneuil has described as occurring after operations performed upon the genito-urinary tract.

In the matter of diagnosis, there is but little danger of confounding the polyuria attending pregnancy with diabetes and cystitis. Diabetes occurring in the course of gestation, frequently reveals itself by emaciation, tuberculosis, or cachexia of the mother, or by the death of the fœtus and abortion. A chemical examination will remove all doubt. It is easier to mistake this polyuria for cystitis. The latter is sometimes accompanied by polyuria, but this is never considerable. Moreover, there are tenesmus and intestinal pain, often quite severe, which do not exist in true polyuria. Micturition is frequent in both cases, but in cystitis the urine is passed in small amounts, a few drops at a time, whilst in polyuria the urine is abundant at each micturition. Finally, in true polyuria the urine does not deposit urates, phosphates, muco-pus, or blood; there is no pain in the intervals between micturition, the bladder preserving its normal capacity and being susceptible of a certain amount of distention; each micturition completely relieves the patient. The urine of the polyuria of gestation is clear, slightly acid, and of a normal composition, its density being diminished by dilution of the salines and extractives. The prognosis of this condition seems to be good.—*Archives de Tocologie*, December, 1890.

CIRRHOSIS OF THE LIVER IN CHILDHOOD.

HEPATIC cirrhosis is rare in children, as all observers since Gerhardt have noticed. If we except those due to hereditary syphilis, not more than one hundred cases have been reported. Syphilitic infection of the liver was first described by Gubler, in 1847; and Virchow, in 1860, added a remarkably exact description of the histological features of the different forms. With cirrhosis due to syphilitic infection must be included that form due to tuberculosis. One of the first cases of cirrhosis of the liver observed in a child, that of Becquerel (1840) was in a tuberculous patient, but it was not until 1883 that Sabourin spoke of the etiological *rôle* of tuberculosis in the formation of hepatic cirrhosis. After these two great causes the eruptive fevers must be classed as most prominent in giving rise to hepatic inflammation, as proven by Laure and Honorat (*Revue mens. des Mal. de l'Enfance*, March, 1887). According to a table published by Edwards in the *Archives of Pædiatrics*, one-third of all the cases reported were due to infectious diseases. Congenital obstruction of the bile-duct has been recognized in one case as a cause of hepatic cirrhosis. Cardiac lesions are frequent causes of cirrhosis in childhood, quite a number of cases arising from this cause having been reported. While alcohol is not so frequent a cause of cirrhosis in children as in adults, it nevertheless is a more frequent cause than generally supposed. In one hundred cases, seventeen were probably of alcoholic origin, and eleven of the seventeen were certainly due to that agent.

As regards the pathological anatomy of the cirrhotic liver, the following alterations are noticed: There is a dilatation of the interlobular vessels; a proliferation of the connective tissue in the dilated portal spaces, with prolongations extending into the interior of the lobules, even to the central vein; fibrous thickening of the walls of the vessels; proliferation of the biliary canaliculi; and sometimes, at the periphery of the lobules, fatty degeneration of the hepatic cells. Ordinarily the cirrhotic process is generalized, but at times it is disposed in islets. In the first stage of the disease the organ is large, soft, brownish-red or violet in color. Then, as the cirrhosis is established, the liver diminishes in size and becomes hard and elastic.

As in adults, the symptomatology varies much, according to the stage of the lesion and the age of the patient. Thus in young infants vomiting is very frequent, and gastric disturbances are marked. Con-

stipation is the rule, but sometimes diarrhœa accompanies the vomiting. Hæmatemesis is frequently encountered, and occasionally intestinal ulcerations with melæna. Epistaxis is very frequent; hæmorrhages from the mouth, subcutaneous hæmorrhages, hæmorrhagic purpura, and chronic urticaria are also quite common. Two symptoms are especially frequent, namely, jaundice and ascites, and contrary to what occurs in adults, these symptoms often occur together. Their intensity varies much according to the case. In some cases the ascites is scarcely noticeable; in others, on the contrary, it is necessary to tap two or three times. Especially does the ascites play an important *rôle* in cases in which the cirrhosis succeeds a scarlatinous infection or in cases where alcoholism is manifest. The jaundice is frequently only perceptible, whilst in other cases it is pronounced and permanent. Œdema occasionally occurs. Dilatation of the veins of the abdomen and chest are very constant, and especially prominent in cases in which the ascites is pronounced. In one-fifth of the cases reported albuminuria with renal sclerosis was noticed. Convulsions, coma, and ataxo-adynamic phenomena are advanced symptoms indicating a fatal termination. The prognosis is bad, a fatal termination usually following in two or three years. The progress of the disease is more rapid than in adults. From a diagnostic point of view the greatest difficulty lies in differentiating this disease from tubercular peritonitis, and care must be exercised in this respect in each case.—Blanche Edwards in *Le Progrès Médical*, January 10, 1891.

REGULATION OF PROSTITUTION.

Moeller in the *Journal des Maladies Cutanées*, December, 1890, makes the assertion that the measures adopted in the regulation of prostitution are inefficient from a hygienic point of view. While admitting that the danger of contagion is greatest during the primary stage of syphilis, and slightly less during the secondary period when the external manifestations of the disease are present, he claims that during the entire secondary period the person infected is able to transmit the disease, even when there are no external manifestations, as has been proved by the infection of nurses from infants and *vice versâ*, and by the infection of women during intercourse. This contagiousness of syphilis during the latent stage of the secondary period, is but little marked if the body of the infected person does not present any external solution of continuity; but the slightest scratch or laceration of the skin or mucous membrane considerably increases the danger of contagion. For this reason Moeller claims that persons afflicted with syphilis should abstain from sexual intercourse not only during the existence of the primary sore, or when the secondary manifestations are present, but in the latent period as well. This is the duty of every man or woman affected with syphilis, to neglect which is culpable. He goes on to say that our present regulations are based upon the assumptions of physicians at the beginning of this century, who believed that gonorrhœa, soft chancre, and syphilis, were all of the same nature, and only contagious in the initial stages. The researches of the succeeding years have entirely revolutionized these views, hence the necessity of altering the laws governing prostitution to meet the dangers which have been discovered.

As a substitute for the present laws upon the subject he suggests a system as follows: Every person who is convicted of certain offences relative to prostitution, or who has committed some infraction of the articles of the penal code, should be, if he be sentenced to imprisonment, submitted to a physical examination at the moment of arrest. This examination should be repeated at the expiration of punishment. If the physician confirms the presence of syphilitic lesions, the patients should be admitted into a hospital for treatment. In addition, they should be forbidden to resume their trade, and instructed not to indulge in sexual intercourse as long as the dangers of contagion exist. They should likewise be obliged to submit to periodical visits during a variable time, to be determined at the beginning of the sickness. The advantage which Moeller claims for this system is, in the first place, the suppression of the registration of prostitutes; second, in place of leaving to hazard or to arbitrary attention the designating of the prostitutes who should be submitted to sanitary visits, it is the prostitutes who, by the infractions they have committed, would designate themselves, in virtue of a positive law which they know and which they ought to recognize. Moreover, the civil authorities would no longer recognize the right of the infected prostitutes to continue their business, and would interdict them from the practice of their profession, so long as they could be dangerous to the public health. Thus would disappear that security which the public accords, rightly or wrongly, to the registered prostitutes, who are considered as healthy in virtue of the certificate delivered after the inspector's visit. Finally, the prophylactic system thus designed would neither violate individual liberty nor the moral law.

THE ELIMINATION OF MERCURY.

The following table illustrates the results obtained by Dr. H. Stern in his investigations regarding the elimination of mercury.

The second column shows the total amount of mercury given. In the majority of cases it was administered hypodermically in the form of the oleum cinereum of 50 per cent. strength; in Case VI. it was used as a plaster, and in one, as inunctions with blue ointment.

In the third column are shown the number of days which had elapsed since the last treatment with mercury, at the time the examinations of the urine began. In the fourth column the number of days during which the total daily amounts of urine were tested for mercury by quantitative analysis, and in the fifth column the total amount of mercury found during those days is shown.

Case	Mercurial treatment.	Time elapsed since last treatment.	Total quantity of urine examined during—	Amount of mercury found.
I.	0.35 c.c. ol. cin. 50 per ct. (hypoderm.) (= 2.713 gr. Hg.)	91 days.	10 days.	0.0002 grm. (0.0031 gr.)
II.	0 41 c.c. ol. cin. 50 per ct. (= 3.1 gr. Hg.) + 0.10 c.c. ol. cin. 50 per ct. (= 1.55 gr. Hg.)	174 "	10 "	0.0006 grm. (0.0093 gr.)
III.	0.45 c.c. ol. cin. 50 per ct. (= 3.40 gr. Hg.)	58 "	10 "	0.0005 grm. (0.00775 gr.)
IV.	0.35 c.c. ol. cin. 50 per ct. (= 2.713 gr. Hg.)	181 "	10 "	Traces.
V.	0.45 c.c. ol. cin. 50 per ct. (= 3.49 gr. Hg)	35 "	6 "	0.0031 grm. (0.04805 gr.)
VI.	Ca. 10 × 10 c.c. (= ca. 4×4 in.) emplastr. hydr. ol. during 69 days (changed three times).	24 "	7 "	0.0007 grm. (0.01085 gr.)
VII.	Blue ointment rubbed into the skin abundantly for two years, 444 grm. (= 6882 gr.) blue ointment.	21 "	5 "	0.0077 grm. (0.11935 gr.)

—*Wiener klin. Wochenschrift*, Dec. 25, 1890.

REVIEWS.

A PRACTICAL TREATISE ON FRACTURES AND DISLOCATIONS. By FRANK H. HAMILTON, A.B., A.M., M.D., LL.D. Edited by STEPHEN SMITH, A.M., M.D. Philadelphia: Lea Brothers & Co., 1891.

IN any work upon general surgery adapted, as so many are, to the needs of the practitioner who is hurried too greatly to look up more than the necessary facts, a complete treatise upon any one subdivision would be out of place. Dr. Hamilton's work has always been recognized as the leading American authority upon fractures, and its great utility has been evidenced from the rapidity with which it has undergone revision after revision, until the volume which lies before us, edited by the author's pupil and at one time assistant, has reached its eighth edition.

Dr. Hamilton's opportunities for observation both in private and military practice during his long professional career, his profound knowledge of the anatomical relations and mechanical adjuvants in the causation and treatment of fractures and dislocations, together with the results of numerous and carefully conducted post-mortem dissections have rendered his book in its later editions of far more value than any other text-book upon these two subjects. The present edition, with none of its former valuable data eliminated and with such additions as the recent advance in surgical treatment (especially in antisepsis) has taught, makes *Hamilton on Fractures* a necessity not only to the surgeon but also to every physician.

The author has condensed and rearranged many of the clinical reports and added much thereto. Over one hundred new illustrations fully explaining the context, both old and recent, have been inserted, many of which are photographic reproductions of the lesion *in situ*.

The present volume follows its predecessors to a great extent in its general arrangement, part first being devoted to the consideration of fractures, part second to dislocations.

In the preliminary chapters a very thorough exposition is given of the classification of fractures in general, together with their causes, symptoms, diagnosis, treatment, complications and sequelæ. Many theories, a few years ago unknown or doubtful, are here proven correct by numerous cited cases. No more complete collection of the factors in causation and symptomatology has ever appeared. In discussing treatment, the author always presents and strongly upholds his own method in each case, but due weight is also given the opinions and results of others, no matter how widely at variance with his own views. Every method of treatment that has ever been tried in the case in point is mentioned, its good side commended, or its fault detected and the remedy suggested. The chapter upon delayed, vicious, and non-union of bones is especially clear, and must, if carefully studied, be of immense value and comfort to everyone who, if he practises surgery at all, at some time meets with some one of these troublesome results even after most careful treatment. Non-union, about which concerning the frequency of its occurrence statistics are so variable, the author estimates as happening but once in five hundred cases. As far back as the decade 1830–1840, of 946 cases of fracture treated in the Pennsylvania Hospital, not a single false union occurred. We note gladly that Dr. Hamilton does not approve of a primary "fixed" or "immobile" starch, plaster-of-Paris, or silicate-of-sodium dressing in the treatment of recent fractures. Nor does he recommend the "primary roller," so-called. "Immovable dressings are not only liable to become too tight as the swelling augments, but the surgeon may omit to notice that as the swelling has subsided they become too loose." "Except in rare cases and for especial reasons . . . . I cannot recommend the employment of any bandages next the skin."

The author then takes up in regular order, commencing with those of the face, all the bones in the skeleton, thoroughly discussing every fracture to which they are liable, giving cause, symptoms, diagnosis, complications, and treatment. Not even the most trivial point is overlooked, and one having read the book feels that all that is known to science upon the subject has been given him from which to draw his own conclusion. It is impossible to give precedence to any one chapter over another, but if any be named, those upon fracture of the vertebræ, humerus, femur, and pelvis are especially full and valuable. As Dr. Hamilton was one of the surgeons in attendance upon the late President Garfield, his account of the gun-shot fracture of the vertebræ, with the course of the case prior to death and photographs of the specimens and official post-mortem records, are most interesting.

Part second—dislocations—follows in arrangement the previous pages. And here the most careful labor has evidently been bestowed upon the chapters describing luxations of the shoulder and hip, the illustrations,

especially those depicting the various mechanisms in reduction, being exceptionally good.

Too much praise cannot be bestowed upon a work of such magnitude, so carefully written. It is everywhere clear, compact, concise. Principles are plainly enunciated and thoroughly elaborated; clinical examples of all possible cases abound. The seven hundred illustrations with which the work is embellished are by far the best we have ever seen in a text-book of this character. Typographically the appearance is good, and subordinate matters being in small print, one sees at a glance the important facts in larger type.

CORRESPONDENCE.

NEW ORLEANS.

The Charity Hospital Board of Administrators have presented their report to the State Legislature for the year 1890. The total number of patients treated was larger than it has ever been before. 6680 patients were admitted into the wards, 13,315 were treated in the outdoor consultation clinics, 1247 in the dental department and 1349 were attended by the ambulance surgeon. There were 1023 deaths during the year. The mortality of the hospital patients was materially increased during the last three months of the year owing to the large number of cases of pneumonia which occurred during the epidemic of "la grippe" prevailing at that time. The hospital is in good condition and two new buildings for the out-door clinic will be erected in a short time.

On March 5th the Board of Administrators of the City Eye, Ear, Nose and Throat Free Hospital held their first annual meeting. They decided to drop the words "city" and "free" from their title, as many patients, thinking that this hospital is supported by the city, go there when they could pay a physician. The affairs of this hospital are in a prosperous condition. From December, 1889, to December, 1890, 627 surgical operations were performed, and 4816 patients received medical treatment. The number of visits made by applicants for treatment was 3816.

There were thirty-five applicants at the competitive examination for resident studentship in the Charity Hospital for the next two years, of whom the following gentlemen were successful: J. J. Ayo, C. M. Brady, H. S. Lewis, J. R. Jiggitts, C. L. Horton, H. F. Thigpen, H. R. Bohn and E. J. Reeves. The examination was oral, written, and clinical.

About the middle of April an examination will be held for the position of Assistant House Surgeon of the Tours Infirmary. Applicants must be graduates of medicine, and the successful candidate must live in the infirmary. The salary of the position is $600 a year and board.

The Eye, Ear, Nose and Throat Hospital has reserved rooms for the treatment with Koch's lymph of tubercular patients. One patient, who had lupus, died while under treatment. On the third day after the injections were commenced a large amount of blood and albumin, with granular and hyaline casts, was noted in the urine. The patient died with symptoms of peritonitis. His urine is said to have been normal before the injections and there was no sign of tubercular trouble elsewhere. The autopsy showed that he died of acute peritonitis and nephritis. Prof. Jos. Jones tendered the bottle of lymph sent him by President Harrison to the authorities of the Charity Hospital, but it was never used.

The Board of Administrators of the new Hospital for Women and Children have made an excellent selection in Dr. E. D. Martin, whom they have elected to the position of House Surgeon. This hospital will be run by the "Ladies' Unsectarian Aid Society." It is a "pay" hospital, and any physician can send his cases there and have them under his own care.

The hospital at the U. S. Barracks has been finished, and reflects credit on Surgeon Wm. Kneedler, who has superintended its construction. It is a frame building, situated in the rear of the officers' quarters, and has all modern conveniences. It will have accommodations for twenty-four patients. The rooms are comfortable and well lighted.

REFLEX PAIN IN REMOTE REGIONS AN EVIDENCE OF INTERNAL HÆMORRHAGE.

To the Editor of The Medical News,

Sir: Referring to your valuable article in the last number of The Medical News on "Abdominal Pain in Hæmorrhage into the Pericardium" I wish to communicate the following three cases taken from my records:

Sept. 1880, J. K., a German, aged fifty-nine years, while engaged in playing chess with me complained of an excruciating pain in his left knee, which had developed a few hours before and gradually became more intense. He had never suffered with rheumatism or neuralgia of any kind, never met with any injury and never felt any pain in that knee. An examination gave no result; there was neither redness, swelling nor tenderness. He went home promising to use certain anodynes as directed by me. Late the same night I was sent for, the pain not having diminished. A hypodermic of Morph. sulph., one-sixth grain, gave no relief, and it was followed fifteen minutes later by a second injection of one-fourth of a grain and the pain became less severe. The next day the pain remained about the same; he refused another hypodermic and I had a blister applied at 11 A. M. Otherwise his health was undisturbed, there being no symptom or sign of any other morbid condition. As I was informed later, the pain subsided somewhat about five o'clock in the afternoon, probably from the effect of the blister still covering the spot. A few minutes before 6 P. M. the pain again became suddenly intense; he expressed a desire to use the commode, and while sitting upon it he was seen to fall forward. An immense hæmorrhage extending over the entire base of the brain had caused the fatal issue before I reached him an hour later.

Z. S., aged sixty-three years, a remarkably active and healthy-looking Israelite, while visiting, on the afternoon of Dec. 14, 1884, a lady friend with whom he had been very intimate for years, complained of a severe pain in the left leg, a little below the knee. This pain became so severe that a neighboring physician, a homœopath, was sent for. He had the patient go to bed and administered various internal remedies. At about 9 P. M. the

pain became easier, when suddenly all the symptoms of the classical apoplectic seizure developed. In this state he was removed to his home, where I saw him about 11 P. M. Venesection, the application of croton oil to his tongue, and the internal use of tartar emetic caused him to regain consciousness; but when I saw him the next morning his temperature was 102° and the fatal issue seemed imminent. Later in the day the hæmorrhage recurred and he died the same night.

October 11, 1886, J. F. S., aged fifty-three years, a Catholic bishop, consulted me about a severe pain in his back. The closest examination failed to reveal its cause. It was not lumbago, for no movement of any kind augmented or diminished the pain. After several days of fruitless medication a blister cured it. The bishop then remained well for three months, when the same pain suddenly returned while he was at his home on the night of January 16th. Nothing seemed to give relief, and a little after 5 A. M. death occurred from cerebral hemorrhage.

No autopsy was made in the last two cases, but the diagnosis was clear. I report these cases without at present desiring to discuss the nature of these reflex pains. DR. HUGO ENGEL.

NEWS ITEMS.

Army Medical Board.—An announcement was recently made that an Army Medical Board would be in session in New York City during April next for the examination of candidates for appointment in the Medical Corps of the United States Army, to fill existing vacancies. At the time of that announcement there were only five vacancies to be filled. Recent Congressional legislation has, however, permitted the retirement of certain officers, so that there are now fourteen vacancies in the grade of assistant surgeon, with the probability that the number will be increased to seventeen by the time the examining board begins its labors.

As already stated, persons desiring to present themselves for examination by the Board will make application to the Secretary of War, before April 1, 1891, for the necessary invitation, stating the date and place of birth, the place and State of permanent residence, the fact of American citizenship, the name of the medical college from which they graduated, and a record of service in hospital, if any, from the authorities thereof. The application should be accompanied by certificates based on personal knowledge, from at least two physicians of repute, as to professional standing, character, and moral habits. The candidate must between twenty-one and twenty-eight years of age, and a graduate from a regular medical college, as evidence of which his Diploma must be submitted to the Board.

Further information regarding the examinations may be obtained by addressing the Surgeon-General U. S. Army, Washington, D. C. C. SUTHERLAND,
Surgeon-General U. S. Army.

The Medical and Surgical College of New Jersey.—It affords me much pleasure to inform you that our bill repealing the charter of the Medical and Surgical College of this State has been passed by the Legislature and approved by Governor Abbett. It is hardly necessary for me to say that this Board feels that it has, in the first year of its existence, done something toward the improvement of the medical profession, not only in New Jersey, but throughout its sister States.

Yours very truly,
WILLIAM PERRY WATSON,
Secretary of the State Board of Medical Examiners.
JERSEY CITY, March 11, 1891.

Notice to the Military Surgeons of the National Guard.—DR. NICHOLAS SENN, of Milwaukee, Surgeon-General of Wisconsin, is desirous of obtaining the name and address of every surgeon of the National Guard for the purpose of taking the preliminary steps toward the formation of a permanent National Association.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM MARCH 17 TO MARCH 23, 1891.

By direction of the Acting Secretary of War, PASSMORE MIDDLETON, *Major and Surgeon*, is relieved from duty at St. Francis Barracks, Florida, and will proceed to Newport Barracks, Kentucky, and await further orders. The travel enjoined is necessary for the public service.—Par. 8, *S. O. 62, A. G. O., Washington, D. C.*, March 19, 1891.

BIRMINGHAM, HENRY P., *Captain and Assistant Surgeon.*—Is granted leave of absence for one month, with permission to apply for an extension of one month, to take effect upon the arrival at Boise Barracks of Robert R. Ball, First Lieutenant and Assistant Surgeon.—Par. 2, *S. O. 39, Department of the Columbia*, March 13, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 21, 1891.

CLEBORNE, C. J., *Medical Director.*—Detached from Naval Hospital, Norfolk, Va., and ordered to Naval Hospital, Chelsea, Mass.

PENROSE, T. N., *Medical Inspector.*—Ordered in charge of Naval Hospital, Norfolk.

STEELE, JOHN M., *Passed Assistant Surgeon.*—Detached from Coast Survey Steamer "Bache," and granted three months' leave of absence.

GAINES, JAMES H., *Surgeon.*—Placed on the Retired List, March 18, 1891.

RUTH, M. L., *Surgeon.*—Granted a month's leave from April 2d next, with permission to leave the United States.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication, or 250 reprints will be furnished instead of payment, provided request for reprints be noted by author at top of manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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ORIGINAL ARTICLES.

A SUCCESSFUL PORRO-MÜLLER OPERATION FOR MALFORMATION OF THE UTERUS AND VAGINA.

BY WILLIAM E. ASHTON, M.D.,
OBSTETRICIAN TO THE PHILADELPHIA HOSPITAL.

THE patient, a mulatto woman, was brought to me in September, 1890, by her physician, Dr. James L. Kite, of Philadelphia, for an opinion as to the possibility of delivery by the natural passages. The history of the case was as follows:

Sophie D., aged twenty-five years, born in Virginia, and married for one year. She was at the time seven and a half months advanced in pregnancy. She was healthy as a child and began to menstruate at seventeen years of age. Her periods occurred regularly, lasting two days, and were always followed by leucorrhœa which continued for from three to seven days; during the last three years, however, the vaginal discharge has increased in quantity. At the time of the menstrual flow she suffered from the reflex symptoms common to all women; there was, however, no great pain at any time. She was examined six years ago by her family physician, who told her that owing to absence of the womb she could never menstruate. Her statement that she had menstruated every month was discredited. She was married in September, 1889; pregnancy occurring in January, 1890. During her entire pregnancy there was hæmorrhage from the vagina every twenty-eight days.

On examination I found the vagina to be only two inches in length, and ending in what at first seemed to be a blind *cul-de-sac*. More careful manipulation, however, revealed a number of small elevations radiating in all directions from a slight depression in the centre of the vaginal pouch. This I took to be the sinus through which the vagina communicated with the uterus. Examination through the rectum showed the cervix to be above the vaginal *cul-de-sac* and separated from it by a distance of at least half an inch.

Taking these anatomical conditions of the organs into consideration I decided that I was dealing not with atresia but with a malformation of the upper segment of the vagina and the lower part of the uterus. This anomaly had so altered the normal relations between the organs that delivery by the natural passages was impossible. I, therefore, did not feel justified in advising the patient to allow nature to take its course, especially as I was uncertain, prior to the operation, as to the character of he structures uniting the vagina with the uterus. And, again, as the dangers of a section are but slight, in the hands of an abdominal surgeon, I urged the patient to undergo the Porro operation. Prior to operating the case was examined by Drs. Robert P. Harris and J. M. Baldy, and my colleagues Drs. E. E. Montgomery and Barton Cooke Hirst, all of whom concurred with me in the diagnosis and in the advisability of a section.

Operation.—The operation was performed in the amphitheatre of the Philadelphia Hospital on October 17, 1890, in the presence of a large number of physicians and medical students. I was assisted by Drs. Barton Cooke Hirst and E. E. Montgomery, and my resident physician, Dr. Bitting.

The patient was prepared in the usual manner employed for all forms of abdominal operations. The only instruments used were a scalpel, six hæmostatic forceps, one pair of scissors, a needle-holder, and needles and sutures for uniting the abdominal wall and for stitching the parietal peritoneum to the stump, four surgical sponges, Tait's uterine constrictor, and a rubber ligature.

Abdominal incision.—The incision was begun at 11.18 A. M. It extended from within three fingers' breadth of the pubes to about one inch above the umbilicus and was six inches in length.

Eversion of the uterus.—At 11.20 A.M. the uterus was everted. Before the organ was delivered it was given a quarter of a rotation upon its long axis so that its antero-posterior diameter instead of the transverse presented at the abdominal opening.[1] After eversion of the uterus dry bichloride towels were placed around the cervix so as to close the abdominal cavity, thus preventing the access of fluids and the escape of the intestines.

Constriction of the cervix.—At 11.21 A.M. a rubber ligature was thrown loosely around the cervix and the ends secured by hæmostatic forceps. Dr. Hirst then encircled the neck of the uterus with his hands, making, however, no pressure.

Incision of the uterus.—At 11.21 A.M. an opening large enough to admit my finger was made into the anterior part of the body of the uterus. This opening was then rapidly enlarged by tearing the muscular fibres with my fingers.

Extraction of the child.—At 11.21 A. M. the membranes were ruptured, the child grasped by the hips, delivered, and the cord cut after constricting it with a pair of forceps. The child was then handed to

[1] This plan was suggested to me by Dr. E. E. Montgomery,

Dr. Montgomery, who placed it in the incubator. The liquor amnii was caught in a basin held by Dr. Bitting when the membranes were ruptured. After the child was delivered Dr. Hirst tightened his grasp around the cervix, thus absolutely controlling the hæmorrhage until I made taut the rubber ligature and kept it in that condition by securing the ends close up to the cervix with forceps.

Removal of placenta and membranes.—At 11.22 A.M. the placenta was detached and removed along with the cord and membranes. The uterus at once contracted strongly.

Sutures.—The abdominal wall was closed with silkworm-gut, using four sutures to an inch. I used a curved needle threaded with catgut to stitch the parietal peritoneum to the stump.

Removal of the uterus.—Tait's constrictor was now applied to the cervix below the rubber ligature, and the wire tightened, the constricting band of rubber being then removed. The uterus was amputated close up to the wire, leaving, however, enough tissue for the stump. It was 11.40 A.M. when the uterus was removed, just twenty-one minutes and forty seconds from the time I began my incision into the abdominal wall.

History of the case subsequent to operation.—The pulse after the operation was eighty, and at no time during convalescence exceeded eighty-eight. The recovery was afebrile, the stump coming away on the twenty-first day after the operation. A free movement from the bowels was induced by a dose of salts twenty-four hours after the operation. The feeding and general care of the patient were the same as usually carried out during convalescence after abdominal operations not involving the intestinal canal.

Child.—The baby, a female, weighed at delivery six pounds and ten ounces; its weight, January 19, 1891, was twelve pounds and twelve ounces. The following are the measurements of the fœtal head taken immediately after the operation: M. 13; O. M. 11½; O. F. 11; Sub. O. B. 10 cm.; Bi. P. 10½ cm.; Bi. T. 8½ cm.; T. B. 9½ cm.; and the F. M. 8½ cm. The great circumference was 36½ cm., and the small 31¼ cm. The baby was placed at the breast at half-past seven o'clock in the evening of the day of operation, and was nursed regularly from that time on.

REMARKS.—I found the tissue connecting the uterus with the vagina to be simply a reflection of the peritoneum. If the woman had been permitted to fall into labor, the head, being driven down by the uterine contractions, would have ruptured the peritoneal connection between the uterus and the vagina, and the child would have escaped into the abdominal cavity. Giving the uterus a quarter of a rotation on its long axis I consider of great importance in the technique of the operation, as the incision through the abdominal wall need not be so long. This manœuvre enables the Müller modification to be performed through the same length of incision as is the simple Porro, doing away entirely with the objection to the former method of operation. The remarkably short incision—only six inches—which I made, proves this beyond dispute. Whatever the opinion of surgeons regarding the increased danger to life by long abdominal incisions may be, certainly no one can deny the fact that a short opening reduces largely the risk of ventral hernia.

After the eversion of the uterus, sutures were not introduced at the upper part of the incision, but the peritoneal cavity and intestines were protected with dry bichloride towels. This, I believe, to be the better plan, as the fœtus can be delivered more rapidly, and the operation itself is more aseptic and orderly—results sufficient in themselves to recommend its use.

The cervix was not constricted until the child was delivered, when my assistant compressed the neck of the uterus between his hands while the rubber ligature was being drawn taut; this plan prevents the child from being asphyxiated.

It is very easy to select a point at which to begin the opening into the womb, as the fœtal extremities can be accurately located through the uterine wall. The opening into the uterus was made of sufficient size to admit the index finger; the incision being further enlarged by tearing the muscular fibres. This lessens the danger of cutting the fœtus, and, at the same time, greatly increases the rapidity of the operation.

The plan adopted for securing the rubber ligature after it had been drawn taut enables the operator to remove it quickly as soon as the wire constrictor is in position.

Irrigation of the peritoneal cavity was not necessary, as the towels kept everything out of the abdomen. The placenta was situated on the posterior wall of the uterus, near the left oviduct. The quantity of blood lost during the operation was less than the amount which escapes during a natural labor.

In suturing the abdomen four threads of silkworm-gut to an inch were introduced to guard against ventral hernia. I always adopt this precaution in abdominal operations, as I believe there are many cases in which the abdominal wall gives way because too few sutures are used.

I believe the Porro-Müller operation is always preferable when its performance is possible. Notwithstanding the success attained by German surgeons with the Sänger method, I believe the Porro-Müller modification to be the safest. After the child is

delivered the operation becomes a hysterectomy, with the stump treated outside of the peritoneal cavity. The mortality of Martin and others, who advise the intra-peritoneal treatment after hysterectomy, is greater than that of those operators who use the extra-peritoneal method. I believe, therefore, that the complete extirpation of the body of the uterus is the safest plan. Again, a woman who is subjected to a Cæsarean operation, because of an obstruction, should never be allowed to run the risk of a subsequent pregnancy. Furthermore, the Porro-Müller operation can be done with rapidity, which is a great advantage, especially in those cases in which the operation is performed after labor has begun and the patient is exhausted. That the Müller modification necessitates a very long abdominal incision is no argument against the method, as I have shown that the uterus, prior to extraction of the child, can be everted through an opening of only six inches in length.

In conclusion, I desire to enter my protest against slow operations, especially those involving the abdominal cavity. Although the peritoneum may be invaded, and operations of the gravest character successfully performed, it is a great mistake to imagine that the cavity of the abdomen can be kept open and its contents insulted by prolonged manipulations, without retarding convalescence and causing many cases to die of shock, which could be saved by rapid work. The speedy recovery of this case of Cæsarean section, I believe, was due, in no small measure, to the rapid execution of the operation. The character of the pulse, and the condition of the stomach subsequent to the operation, indicated that there had been no shock or ether-saturation of the patient. A large number of the abdominal operations, especially intestinal resections and the like, which I have performed on the lower animals, have been simply to gain manipulative dexterity. Without this dexterity no surgeon can hope to be successful in abdominal work, no matter how profound his knowledge of the subject may be.

THE SHURLEY-GIBBES TREATMENT OF PULMONARY TUBERCULOSIS.[1]

By E. FLETCHER INGALS, M.D.
of Chicago.

The treatment for pulmonary tuberculosis, proposed by Drs. Shurley and Gibbes, consists of hypodermic injections of solutions of the chloride of gold and soda, or of iodine and inhalations of chlorine gas. The injections should be made with an absolutely clean syringe, which should always be washed with pure alcohol before and after using. The treatment should be commenced with small doses, which may be gradually increased until some constitutional effects are observed, or until the largest dose recommended is reached. It is usually best, excepting in advanced cases, to begin with the iodine (though it is apt to cause considerable smarting), and it should be continued for from ten to fourteen days, and then it may be given alternately with the chloride of gold and soda solution, and later on (after four or five weeks) the latter solution may be used alone if everything is going well. With some patients the chloride of gold and soda answers best. I, however, think more benefit will be derived from the iodine solution.

The dose of iodine is from $\frac{1}{20}$th to $\frac{1}{6}$th of a grain, and of the chloride of gold and soda from $\frac{1}{24}$th to $\frac{1}{8}$th of a grain. The minimum dose should be used at first and it should be increased by about 20 per cent. each day until the maximum dose is obtained, unless constitutional symptoms occur. When iodine is used it is to be increased as just directed, unless symptoms of iodism appear, or unless there is some loss of appetite, disturbance of the bowels, or complaint of unusual fatigue. If any of these symptoms occur the iodine may be substituted by the chloride of gold and soda for a day or two and then given again in diminished doses, which may subsequently be gradually increased. Sometimes while patients are receiving the chloride of gold and soda in large doses pains are experienced in the bowels, or in some instances there are uncomfortable sensations in the head; occasionally, also, profuse sweating has been noticed. If any of these symptoms develop the dose should be at once diminished, or the remedy substituted by the iodine.

The most favorable place for the injection is in the loose skin in the gluteal region, and care should be taken that it is thrown simply into the cellular tissue beneath the skin, and not into the muscles, which would cause unnecessary pain. I have found that rubbing the part for two or three minutes after the injection will sometimes greatly relieve whatever pain it may cause. In ladies, where it is difficult to get at the point mentioned on account of the clothing, I usually make the injections in the back just below the inferior angle of the scapula or between this and the spinal column.

I would advise daily injections for about two weeks, every second day for the two following weeks, and subsequently once in three, four, five, six or seven days, gradually diminishing the frequency according to the result. When these remedies are acting well the appetite and strength gradually improve, the weight increases, and the cough and expectoration gradually diminish. For the first two weeks Dr. Shurley states the temperature is apt to be increased, but subsequently, in favorable cases,

[1] Read before the Chicago Medical Society, March 2, 1891.

it decreases until the normal point is reached. I have frequently found the temperature subnormal in the forenoon, particularly if the patient had been out in the cold.

The iodine seems to be the better acting, but after using it for a time the chloride of gold and soda appears to maintain (at least for some time) the effects produced by the iodine. Where I have used the chloride of gold and soda alone (as has been recommended in the advanced stages of phthisis) I have not, as a rule, obtained as favorable results as where I have first used the iodine, though occasionally it acts well from the first.

It is very important that the solutions be chemically pure. These I obtain from Dr. J. E. Clark, of the Detroit Medical College, but they may be prepared by any skilful chemist who will consult Dr. Clark's recently published description of his method.

The chlorine inhalations may be given either by means of some of the common or specially devised inhalers, or in a room filled with chlorine gas. The latter is applicable to hospitals where small rooms can be so prepared, or even to small bedrooms, where the arrangement is readily made in the following manner:

First, a steam atomizer is made to throw into the atmosphere of the room a solution of chloride of sodium of the strength of about fifteen grains to the ounce; this is continued until the atmosphere of the room is so permeated by the spray that a person on the opposite side from the atomizer can taste the salt. One or two teaspoonfuls of chlorinated lime are then placed upon a plate or saucer and wet with a mixture of hydrochloric acid, one part, and water, two parts, which causes the rapid generation of chlorine gas. This is then held directly under the spray of the chloride of sodium solution and the gas is carried by it into the atmosphere of the room, where the patient sits for ten or fifteen minutes—as long as he can well tolerate the inhalation.

For use in an office, or other place where a room cannot be appropriated for the inhalation, some of the atomizers already in use for giving deeper inhalations may be employed. Dr. Shurley uses a glass flask such as is ordinarily used for table water, capable of holding two or three quarts, or in lieu of this a large bottle will answer the purpose. This has a hole about an inch in diameter drilled in one side, and has fitted upon the month a rubber face-cap, such as is used by dentists for their nitrous oxide inhalers. It is placed upon a suitable stand and then a mixture of chlorine water with a solution of chloride of sodium, ten to fifteen grains to the ounce, is thrown, by any suitable atomizer, through the opening in the side against the opposite wall of the flask, which breaks it into a fine vapor; the patient at the same time inhales, and the air which is drawn in through the opening in the side of the flask takes up a sufficient quantity of the vapor and chlorine gas. I use the Davidson No. 66 atomizer with from thirty to forty pounds air pressure. Some patients do not bear the chlorine well, and for these I use in the same way a spray of iodine made with four minims of the compound solution of iodine and one drachm of glycerin to the ounce of water. Its effects seem almost if not quite as good as those of the chlorine. Occasionally patients who are using the chlorine inhalations regularly will experience, without apparent cause, an alarming sensation of constriction of the chest some time after the inhalation has been taken.

It is very difficult to obtain chlorine water of uniform strength on account of the various methods employed in its manufacture, and because the gas rapidly escapes when the bottle is uncorked; therefore, a solution which may be strong one day may be comparatively weak the next, and by the following day may have little effect. I have tried various methods to overcome this objection. First, I placed a definite amount (3 or 5 grains) of the chlorinated lime in the flask and added to two ounces of the chloride of sodium solution a half drachm of dilute hydrochloric acid. In this way, as the acidulated spray was thrown against the opposite side of the flask, it ran down upon the chlorinated lime and liberated the chlorine gas; but I found that at first it was liberated too rapidly, if 5 grains of the chlorinated lime was used, while during the latter part of the inhalation little or no gas would be evolved. Hoping to have the gas liberated more uniformly, I had the chlorinated lime made into compressed tablets, but with these I succeeded no better, for from them very little gas was evolved, and even on breaking up the tablet the amount was not much increased, which seemed to indicate that it had disappeared in consequence of the pressure, or from other causes. I then tried the euchlorine gas, which Professor Haines suggested to me as having greater germicidal properties than chlorine and to be less irritating. This we easily prepared by treating pulverized chlorate of potash with chemically pure hydrochloric acid, but in spite of all precautions we obtained with it a large amount of hydrochloric acid fumes, which were extremely irritating. To neutralize these I introduced into this solution prepared chalk, but I found that the carbonic acid liberated in this way carried off with it a large portion of the euchlorine gas, so that the liquid remaining possessed only feeble germicidal properties, and was therefore not suited to the purpose. More recently I have used the U. S. P. chlorine water prepared by Hance Brothers & White, of Philadelphia, of which from ½ to 1 drachm to 2 ounces of the chloride of sodium

solution will make as strong a chlorine gas as can be tolerated by the patient. To avoid the deterioration in strength caused by frequently opening the bottle I adopted a suggestion given me by Dr. Bridge, and had several small glass-stoppered bottles filled from the large one, and used the solution from them. In this way it is not necessary to open the large bottle more than two or three times, and a nearly uniform strength of chlorine gas can be obtained.

I have now been using the Shurley–Gibbes method about eight weeks and have treated by it between forty and fifty patients. In a disease like consumption this length of time is not sufficient to enable us to draw accurate conclusions as to its effect. Dr. Shurley wrote me in the beginning "that the results were certainly encouraging," and I can, from my own experience, heartily corroborate this statement, yet I cannot say exactly how much good has been done. In most of the cases which had reached the third stage of the disease, with large cavities in one lung and the other lung more or less involved, I cannot see that any appreciable good has been done; yet in one of these there has been very marked improvement, as the patient has gained strength and weight, has much less cough and fever, and upon the whole appears very greatly improved. With some patients in the second stage of the disease, with a whole lung involved, we at first appeared to be bestowing benefit, but subsequently concluded that the treatment was useless; while in others of this class very decided improvement has occurred. In the first stage of the disease, where not more than a third of the upper lobe of one lung was involved, the patients as a rule have been so greatly improved that I expect ere long to say of many of them that "they have been cured." Three are now apparently well.

This treatment is based upon careful experimentation, is scientific, thoroughly professional, and seems to be beneficial; therefore, I hope that the profession will give it a careful trial, even to the minutest detail, for it must be remembered that experiments often fail by neglect of some of the details, which to certain observers seem unnecessary. I would not, however, advise the use of this treatment to the exclusion of other remedies which physicians have found of benefit in certain cases, for we cannot experiment upon our patients. I recommend this treatment to patients simply as giving an additional chance. Many failures will undoubtedly be experienced and recorded. Those who use the method in a slip-shod way will surely obtain unsatisfactory results, and even though it be employed in the most skilful manner, with the judicious administration of other remedies, there will necessarily be many patients who cannot be cured by it. However, if properly carried out, I feel confident that much good will come of it and no harm can result.

If even a few patients only are cured, Drs. Shurley and Gibbes will receive the commendation of the profession and will be entitled to the gratitude of the public for their painstaking and laborious efforts to find some way of remedying this dread disease. We congratulate these gentlemen upon having given us what from present indications is one of the most promising methods of treatment yet discovered for pulmonary tuberculosis; but their work is not yet completed, and they and others must work on until instead of from 25 to 30 per cent. from 85 to 90 per cent. of these cases may be prevented or cured.

A CASE OF CEREBRAL SYPHILIS.[1]

By HOWELL T. PERSHING, M.Sc., M.D.,
Professor of Nervous Diseases in the Gross Medical College, Denver, Col.; Physician to the Arapahoe County Hospital.

On November 12, 1889, I was called to see Mrs. N., age twenty-one years; married two years; no children; no miscarriages. Persistent cough for three years, with loss of weight. Otherwise well until present illness. Two days ago, while lying down, but not asleep, she suddenly found herself unable to speak to her husband, and in terror began to cry. Getting up immediately, the right arm was found to be useless. There was no convulsive movement, loss of consciousness, nor giddiness at the time of the paralysis, and no premonitory symptoms could be ascertained to have existed. According to the patient's statement considerable improvement had already occurred. On examination râles were heard at the apices of both lungs. Heart normal. Pupils and movement of the eyes and optic papillæ normal. Face drawn to left side; right side moved very little in attempting to show the teeth. Tongue protruded to the right. Motor aphasia was present. Words were readily recalled and used in their proper connection, but indistinctly articulated. Marked weakness throughout the right arm, but with an effort it could be placed above the head. No weakness of leg. Wrist-jerk exaggerated on right side; absent on left. Knee-jerks above average, but equal. No ankle clonus.

Examination showed no loss of sensibility to touch; no pain nor any elevation of temperature, but patient positively stated that a touch on the right hand or cheek caused a different sensation from that experienced on the opposite side.

The lesion was readily localized in the speech, face, and arm centres of the left side of the brain, the three being in close proximity, or else in the fibres proceeding from these centres, not lower than the internal capsule. Only within these limits could a single lesion produce just the symptoms exhibited. One below the internal capsule would

[1] Read before the Denver Medical Association and Arapahoe County Medical Society, January 15, 1891.

almost certainly have involved some of the cranial nerves, as well as the fibres controlling the leg. For reasons that will appear subsequently I think the lesion was cortical.

A focal brain lesion occurring suddenly must be due to hæmorrhage, embolism, or thrombosis. The age of the patient and the absence of any cause of high pressure in the arteries made hæmorrhage very improbable. There was no endocardial disease or anything else to suggest an embolus, so a diagnosis of arterial thrombosis was arrived at by exclusion. But in youthful, vigorous patients thrombosis is practically unknown, except in connection with syphilitic endarteritis. No history of the symptoms of syphilis could be obtained from the patient, nevertheless the diagnosis was adhered to, and iodide of potassium with mercuric chloride prescribed.

The husband, in a subsequent interview, gave a clear account of a venereal sore occurring during an absence from home about a year previous, followed by indurated glands, macular eruption, and palmar psoriasis.

The patient improved steadily and rapidly. In ten days the symptoms had nearly disappeared. In six weeks she could pick up a pin and even sew with the right hand.

Speech showed no impairment, except during excitement, when it was impeded and slightly incoherent. Insomnia had remained since the attack. The iodide was stopped, but the mercury continued. After this, there were intervals of shooting neuralgic pains of the left side of the head and a succession of colds, each of which brought on a slight relapse of the aphasia.

Then, in spite of an earnest warning, the patient disappeared for two months. March 3, 1890, in response to an urgent summons, I found she had stopped taking the mercury and had suffered for some days, with an intense boring headache located just back of the right frontal eminence, at which point there was tenderness on percussion.

Iodide of potassium was again prescribed but not taken, as the druggist supplied the vehicle without it.

At four o'clock the following morning she had a severe general convulsion with complete unconsciousness, frothing at the mouth, and biting of the tongue. It came on during sleep so nothing could be learned as to an aura or as to part in which the spasm began.

When seen at 11 A. M. her mind was clear, but headache was intense. The grip of the right hand was slightly weaker than that of the left, and the tongue deviated a little to the right, remnants probably of the earlier paralytic condition.

The headache and convulsion were attributed to a syphilitic new growth on the inner surface of the cranium, or more probably in the meninges, causing cortical irritation. The iodide was given in half-drachm doses every four hours, with half a drachm of mercurial ointment to be used by inunction each night.

March 5. Slept better; headache persists. Same dose of iodide every two hours.

7th. Headache better; iodide every four hours.

11th. Headache gone; iodism. Iodide stopped; inunctions continued.

25th. No recurrence of epileptic convulsion or other nervous symptoms. Blue pill substituted for inunctions.

During the next three months the patient took mercury and remained well, but was afterward lost to observation, and has not been seen since.

This case furnishes an example of both of the common forms of syphilis of the brain—endarteritis and meningeal gumma. Syphilitic endarteritis always attacks a large number of arteries, and consists of a gummatous growth between the intima and the elastic lamina. By narrowing the lumen it interferes with the nutrition of the part supplied by the vessel. Thrombosis is then liable to complete the obstruction; and softening—that is, molecular death—will ensue, unless blood is quickly restored to the part by collateral circulation. The basilar arteries supplying the corpus striatum and internal capsule are most apt to be diseased in this way, and as they do not anastomose, softening is certain to occur when one of them is obstructed, usually accompanied by apoplectic symptoms and hemiplegia. Cerebral hæmorrhage from syphilitic arteritis is rare until after middle life. If it occurs it causes similar symptoms. Gowers[1] claims that the prognosis is no better in these cases of hemiplegia than in those not due to syphilis, except that recurrence may be prevented. He mentions cases in which favorable prognosis was given in anticipation of the results of anti-syphilitic treatment, only to intensify the disappointment of the patient upon finding his paralysis permanent. An area of softening, whether due to syphilis or not, is never restored. Subsidence of secondary inflammation brings about some improvement, and the corresponding parts on the opposite side of the brain may to some extent act in place of the damaged tract, but the primary effects of destruction remain.

This is apparently opposed to clinical experience, for it is well known that in syphilitics severe hemiplegia may occur, and in a few weeks, or even a few days, entirely disappear. But it is not to be supposed that softening has occurred in these cases. Vascular obstruction is often cortical as well as basilar, and the cortical arteries as they ramify in the pia anastomose freely.

If a large branch is obstructed a considerable area of the cortex may suddenly become anæmic and hemiplegia be correspondingly complete; and yet, as collateral circulation is restored in a short time, the anæmic part may gradually regain its

[1] Diseases of the Nervous System. Am. ed., p. 828. Also, in the Lettsomian Lectures for 1889.

function with little or no remaining softening. I believe the paralytic attack in the case just reported was due to cortical thrombosis. The prompt recovery alone makes this localization probable. The second lesion in this case was doubtless a new growth, probably of the membranes. Either the base or the convexity may be attacked in this way, the former more frequently. The first symptoms are usually severe headache, worse at night, and insomnia. If the disease is at the base, the next symptom will probably indicate the involvement of one of the cranial nerves. The third nerve is most frequently implicated, but the optic nerve, the fourth, sixth, seventh, and eighth are not infrequently damaged.

If the convexity be attacked, instead of cranial nerve palsy, signs of cortical irritation will appear, usually in the form of an epileptic convulsion. Should the process continue, signs of cortical destruction will replace those of irritation, the symptoms varying according to the area involved. Syphilitic disease at the base is very likely to cause choked disc; but this is not apt to occur if the disease is at the convexity, unless pressure is notably increased.

It will be noticed that the lesions in this case appeared earlier than usual, the onset being about a year after infection, as nearly as could be ascertained.

Syphilis is indicated with sufficient probability to determine the treatment, irrespective of other signs of the disease and the patient's history, in the following cases:

1. Sudden cerebral hemiplegia in patients under forty-five, in whom atheroma, high arterial pressure, and the causes of embolism, notably endocarditis, can be excluded.

2. Progressive multiple cerebral palsies.[1]

3. Insomnia and nocturnal headache, followed either by cranial nerve palsy or cortical irritation.

4. Sudden stupor or coma, without other assignable cause. Somnolence, resembling that of alcoholic intoxication, with pain in the head and aimless, automatic actions.[2]

5. Paretic dementia, in which syphilis cannot be excluded, especially with prodromal nocturnal headache, insomnia, or somnolence and early epilepsy.[3]

In all of these forms the prognosis is good, compared with the gravity of similar symptoms not due to syphilis, but it should be guarded on account of the possibility of irreparable damage having been already done, and the occasional impossibility of securing the absorption of a gumma.[4] The treatment should, of course, be vigorous, consisting in the steady administration of mercury for years and enough iodide of potassium to remove all threatening symptoms or exhaust the tolerance of the patient.

[1] H. C. Wood: Nervous Diseases and their Diagnosis, p. 75.
[2] Wood: l. c., p. 410. Heubner: Ziemmsen's Cyclopædia, Am. ed., vol. xii. p. 327.
[3] Wood: l. c., p. 463.
[4] C. H. Mills: Brain, July, 1889.

SOME REMARKS UPON THE TREATMENT OF CROUPOUS PNEUMONIA,

With Report of a Case.

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The successful management of croupous pneumonia is a problem that occupies to-day as prominent a position for scientific consideration and solution as it did years ago, notwithstanding our present superior knowledge of its morbid anatomy and the recent advances in general medical skill; and, indeed, medical thought is so varied and confused as to its proper treatment that it may be justly regarded as chaotic. Contrary to what was logically expected the discovery of the dependence of this form of pneumonia upon the inroads of a specific poison, has not materially changed the therapeusis, nor are the mortality lists less lengthy or more favorable than those of former years. In view of this disappointing, and it may even be stated with propriety, humiliating, acknowledgment of our inability to handle a disease with which we are so familiar in all of its manifestations, it is incumbent upon clinical observers to discuss frequently and unceasingly its therapeutic management until some method is at last discovered that, *cæteris paribus*, will insure the patient immunity against a fatal issue. The writer cannot present anything very new in this paper, nor can he express the confidence that the line of treatment he has chosen to consider and elucidate will be successful in a large percentage of the cases that are now regarded as necessarily fatal; but he hopes, by drawing renewed attention to the importance of duly considering the relation between the pathological condition present and the physiological action of the drugs administered, to throw more light upon the general plan of symptomatic treatment that is now adopted by the majority of the profession.

Croupous pneumonia is met with in three classes of subjects, viz.: the sthenic, asthenic, and diseased, and presents in each distinctive indications for medical interference. The ordinary or sthenic type will, however, here be treated of alone.

The first question that arises in the consideration of medical treatment, confronts the physician as a problem which may be difficult to solve. In order to relieve the over-acting heart and full, bounding pulse, that is promoting restlessness, keeping up pain

and favoring extension of the inflammation, should he employ some drug that by its sedative action may depress the circulatory apparatus, or is he to practice venesection? The writer fails to see the philosophy of depletion in any instance of so-called plethora, except where it is necessary to relieve the blood pressure for a few minutes, as in apoplexy or pulmonary hæmorrhage due to acute congestion. It is true, blood is very quickly renewed and the withdrawal of fifteen or twenty ounces apparently does no harm, but is it well to add additional labor to the blood-forming organs that are already disturbed in their circulation and nutrition, and are shortly to be more seriously damaged, if the same end can be attained in some other way? Some light may be had upon the proper procedure to adopt, if the causes setting up the peculiar condition of the circulatory system be considered, for why not remove the cause in preference to adopting a mere palliative measure? The violent inflammatory process that has attacked the lung structure produces a shock to the nervous system manifested by anorexia, sometimes nausea and vomiting, restlessness, headache, elevated temperature, irregular flushing of the surface, and spasmodic contraction of the smaller vessels. The latter causes a diminution in the total area of blood-space, which necessarily sends more blood through the heart at each cycle, thus not only abnormally stimulating its action, but increasing the total amount of cardiac work; hence, the heart labors, the bloodvessels appear over-full, and the pulse is full and bounding. The obstruction, *a fronte*, also adds to the cardiac work; more blood than is required is pumped into the sound lung or parts of the lungs not implicated by the inflammation. The interchange of respiratory gases is impaired, and the patient experiences mild dyspnœic symptoms, becoming severe in bad cases. The influence of the vasomotor nervous system over the blood-supply of the lung tissue not being as yet clearly understood in man, it is difficult to say whether the irritation due to the inflammation causes a dilatation, of the lung capillaries, or contraction. Analogous reasoning would point to contraction, but in either case dyspnœa would be present, and the treatment of the general systemic circulation would not be changed. If there was dilatation it would be fair to assume that the inflammatory process would spread much more rapidly than it does, whereas, *au contraire*, it shows a decided tendency to become localized.

Here is a morbid anatomical outline which calls for a drug having a depressing action upon organic life, or to express it more clearly, one which possesses the power of lessening the functional activity of the peripheral nervous system. Several remedies will be thus suggested and the two most important are aconite and veratrum viride, each one having many ardent and authoritative supporters.

Aconite lessens the contraction of the heart, chiefly through its influence upon the vagus centre (Brunton), increases the action of the skin (Ringer, Fothergill, and others) and kidneys (Bartholow), and depresses the functional activity of the spinal cord and peripheral nerve-endings, effects which serve to recommend it above other circulatory sedatives.

The greatest care is necessary in its administration, and the writer cannot but think that adverse reports from the use of aconite in pneumonia are mainly due to its improper employment. If it be given in too large amount the vagus centre is overstimulated, the cardiac ganglia paralyzed, and the general circulation becomes so depressed that it is unable to react when the drug is withdrawn. It must not be given with any idea of reducing the temperature: its influence in this respect being due to its action on the circulation and not to any direct antipyretic effect. One-half to two-drop doses every hour (Ringer) until the pulse falls to 90 is the safest method of giving it. As soon as the heart-beats reach this rate it must be at once stopped, or its powerful paralyzant action will produce damaging results. When the drug has acted sufficiently, the blood flows readily from the arterial into the venous system, the lungs are relieved of their mechanical engorgement, the dyspnœa lessens, and the patient feels less restless. If the movements of the heart can be kept at the normal standard nature may be depended upon to do the rest, so far as the circulation is concerned. The importance of not giving too much cannot be too freely emphasized, for very frequently it only requires a few doses to produce the desired effect. If the drug cannot be left in the hands of an intelligent person or nurse to administer, the physician should see the patient within four hours after the first dose, or send a competent assistant at this time. If it should act unduly and the pulse fall below 70, a hypodermic of the $\frac{1}{60}$th of a grain of the sulphate of strychnine should be given and repeated every two hours, or oftener, until the pulse returns to the proper rate. Aconite given in this way will quell the circulatory disturbance without producing any deleterious results, and entirely obviates the adoption of so questionable a procedure as venesection.

On the fourth or fifth day of croupous pneumonia there is a marked diminution in the albuminoid constituents of the blood, especially the globulin (Sciolla, of Genoa), and in view of this very vital change taking place so early in the disease, it constitutes a grave objection to depletion; and as it has been shown that anæmia tends to promote fatty degeneration of the heart muscle (Goodhart,

Handford), it can be seen that the withdrawal of healthy blood, at the beginning of a disease characterized by high temperature, could only favor this morbid metamorphosis.

Recently there appeared in one of the London journals a report of several cases of pulmonary congestion treated by drawing blood directly from the congested area by means of an aspirator. The largest canula of the apparatus was plunged, under strict antiseptic precautions, into the engorged lung tissue, and the author stated that no difficulty was experienced in removing the requisite amount of blood, and no bad results followed. Such a method is certainly more scientific than general depletion, but its utility is doubtful and the measure too heroic to be generally recommended.

Due attention should be paid to the condition of the alimentary tract, which is sometimes seriously disturbed by reflex influences. Five grains of calomel, rubbed up with an equal quantity of bicarbonate of sodium, should inaugurate the treatment, to secure free evacuation of the bowels, and may be repeated in twenty-four hours if necessary. The administration of such drugs as morphine, quinine, or chloral cannot fail to be reprehensible, unless there be special indications. Morphine upsets digestion by deadening the sensibility of the gastric and intestinal mucous membranes, thereby lessening the flow of the digestive juices, and unless there be severe pain is of questionable utility. Quinine will not reduce the temperature except in massive doses, and when there is nausea is apt to disagree and be rejected. That it exercises any practical influence over the limitation of the pulmonary inflammation is open to question.

Counter-irritation has long been used in treating pneumonia, and there can be no doubt of its usefulness. When small, localized spots of pneumonic infiltration exist "flying blisters" act well; but when large portions of the lung tissue are involved hot flaxseed-meal poultices, containing one-fourth as much mustard, applied until decided redness of the skin is produced, are much more effective. After this the patient's chest should be enveloped in a sleeveless jacket, made of cotton batting, to insure protection from atmospheric changes which necessarily occur in the daily attention to the toilet. While resident physician in the Pennsylvania Hospital the writer, under the direction of his chiefs, applied simple hot flaxseed-meal poultices every two hours during the acute stage of all his pneumonic cases, but the exposure of the patient in removing and putting on each poultice, the discomfort from their weight and bulk, and the extreme doubtfulness of the utility of such a method, are objections which render the simple cotton jacket much more desirable and reasonable. Should the temperature become elevated during the early period, phenacetin may be cautiously given, but never antipyrine nor antifebrin. Five grains every three or four hours will generally be found sufficient; but if the temperature continues to rise above 104° F., some other means should be adopted to combat it. Phenacetin will assist in maintaining the effect upon the circulation produced by the aconite, and will preclude the necessity of repeating the administration of this agent when the circulatory activity proves refractory.

The above measures in the usual run of uncomplicated cases, will answer every purpose for the first stage: aconite to quiet the circulation, calomel to renovate the digestive tract, phenacetin to reduce the temperature and maintain the effect of the aconite, and counter-irritation to assist in checking the inflammation and pain. The diet will be considered later.

As the disease approaches, and during the stage of red hepatization, an entire change in the treatment becomes necessary. The symptoms now manifest are a weak and rapid pulse, mental disturbance, congestion of the liver and jaundice, general nervous stasis, gastro-duodenal catarrh, increase in temperature, profuse sweating, albuminuria, due to congestion of the kidneys, and, in severe cases, threatening symptoms of a failing circulation. Now circulatory depressants are strongly contra-indicated. To stimulate the heart and promote liquefaction of the exudate one drachm of aromatic spirits of ammonia should be given every one or two hours until resolution is fully established, as this preparation of ammonia acts much more satisfactorily, is quickly absorbed, and agrees better with the stomach than the carbonate. The theory that the decomposition of the carbonate of ammonium increases the amount of carbon dioxide in the blood and promotes dyspnœa and imperfect oxygenation is not manifested clinically by any unfavorable symptoms, though this form of ammonia is very apt to be rejected by the gastric mucous membrane. When it is retained it answers the same purpose as the aromatic spirits. To promote nutrition, sustain the vital forces, and stimulate the liver, half-ounce doses of whiskey every two or three hours yield the best results. The *role* played by alcohol is that of an active, diffusible food, which is quickly taken up by the tissues and appropriated for the purposes of reconstruction and physiological change. To allay nausea and gastric irritation the following prescription has been most successful in the hands of the writer: R. Bismuth. subnitrat., gr. xv.; acid. carbolic., gt. j; mucil. acac., ʒss; aq. menth. pip., q. s. ʒij. M. Sig.: Take as required (Bartholow). To combat the high temperature during this stage no antipyretic measure is admissable, save that of hydrotherapy. If

the temperature be 104° F., cold sponging every hour until it falls; if 105° F. or above, the ice-pack. The writer has elsewhere (*N. Y. Med. Jour.*, March 8, 1890) spoken of the effectiveness of this method of reducing fever, and it is especially applicable to pneumonia. The reduction is accomplished in a normal way; that is, by heat radiation and by increased nutrition induced by a more rapid circulation, thereby enabling the system itself to combat the morbid process which is keeping up the temperature. The physiological changes produced in the system by the external application of cold in the form of cold water are: slight chilliness, contraction of cutaneous vessels, short and jerky respiration for a moment or two, increased action of the heart, stronger pulse, sensation of better feeling, and increased muscular activity, followed by a general feeling of surface warmth and increased strength, stronger cardiac contractions, more rapid circulation; regular, deep, and easy respirations, abated sensation of feverishness, improved appetite, and a general bodily calm which frequently induces sleep. A measure acting in this way is certainly more desirable and scientific than one depending for its effects upon the employment of such powerfully depressant agents as antipyrine or antifebrin.

In cases where the formidable symptoms of collapse appear, in addition to the above measures, hypodermic injections of the sulphate of strychnine are most effective; $\frac{1}{60}$th of a grain every hour or half hour may be given until there is a decided response. The following case, which the writer is enabled to report through the courtesy of Dr. John S. Miller, in whose practice it occurred, shows most conclusively the value of this agent. The line of treatment adopted was suggested by a paper of the writer's on the use of strychnine in such a condition (THE MEDICAL NEWS, January 3, 1891), and the result was most gratifying. The condition of the case was so grave as to cause the two physicians in attendance to pronounce death near at hand, and the ambulance surgeon of a prominent hospital refused to move the patient for fear of death occurring on the way to the hospital:

Patient (adult, male) found wildly delirious, with several persons holding him in bed. Examination very difficult. Temperature 105° F.; pulse flickering and so rapid that it could not be counted; respirations 55 and shallow; cyanosis extreme, and sweating so profuse as to have saturated the patient's garments and bed-clothes. Percussion indicated consolidation of both lungs posteriorly and the greater portion of the left lung anteriorly. The anterior part of the right lung was clear, save a few râles. Three vital indications were apparent: relief to the weak and depressed circulation, control of the delirium, and nutriment to the exhausted tissues and nerve centres. These were met by the administration of ¼ of a gr. of morphia sulphate and $\frac{1}{60}$th of a gr. of strychnia sulphate every half hour, with half an ounce of whiskey every twenty minutes. At the end of three and a half hours the temperature was 101.5° F., the sweating had ceased, the pulse had become regular and steady, the respirations had diminished in number and were less shallow, the patient was quiet, conscious, and able to converse.

It is interesting to note the mechanism of recovery in this case: morphine in large physiological doses increases the irritability of the spinal cord (Brunton), thus promoting its functional activity and at the same time obtunds the centres of conscious cerebration. Strychnine does not act upon the cerebrum, but the whole of its physiological force is expended upon the spinal cord and end-organs; hence, the combination of the two agents in the pathological condition present, could only be productive of the most favorable results, if recovery was possible. The strychnine restored the function of the spinal cord, reflex centres, and nerve-endings; the morphine checked the delirium and rectified the mental condition, while the alcohol was utilized as fuel and force to assist nature in recovering herself.

Six or eight dry-cups applied to the chest over the affected area are often very useful in relieving the extreme sense of pulmonary discomfort, and inhalations of oxygen during the period of crisis will improve the quality of the blood and relieve venosity.

It is thus seen that the treatment of the second stage, from a physiological and pathological standpoint, may be summed up as follows: Ammonia to stimulate the heart and remove the exudation, alcohol to supply material for force and reconstruction, hydrotherapy to reduce temperature, strychnine to combat circulatory failure, and morphine to control mental disturbance. Subsidiary measures will, of course, be adopted as the indications arise. Alcohol is to be given freely, commencing with it in the form of whiskey; if this disagrees, then give champagne, then koumiss, then whiskey hypodermically. The amount of strychnine given will depend upon the degree of response to the initial doses; it may with safety be run up to gr. $\frac{1}{20}$th every hour.

The diet is of the utmost importance. Nourishment should be administered every two hours, night and day, from the commencement of the disease. Milk, broths, soft-boiled eggs, raw or stewed oysters, egg-nogs, milk punches, etc., are the most suitable forms of aliment. If the patient becomes unconscious and swallows with difficulty, the milk, alcohol, and medicine may be administered through a nasal-gastric rubber tube without difficulty.

PERIODICAL ATTACKS OF SYMPATHETIC OPHTHALMIA FOR TEN YEARS, DUE TO A BULLET WOUND; REMOVAL OF THE EYE WITH THE BULLET, FOLLOWED BY CESSATION OF THE ATTACKS.[1]

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The following history concerns a miner who figured as a principal in a tragedy in the western part of Maryland ten years ago. The subject of the sketch killed his antagonist and was himself shot in the left eye. The history of the case is as follows:

M. M., age thirty-one, shot in the left eye with a 22-calibre pistol bullet nearly ten years ago. Immediately after the accident he went to an oculist, who advised him to let the eye alone and told him that his vision would in all probability be partially restored, as it was his opinion that the bullet had not penetrated the eye, but had simply glanced and struck it. The vision at this time was limited to light-perception. Since the accident the eye has been the seat of violent attacks of pain lasting for several days, but the patient would frequently be for months without any trouble. Three years ago he was seized with an unusually violent attack in the injured eye, and at the same time sympathetic disease appeared in the other eye, showing itself by sensitiveness to light and profuse lachrymation. The attack lasted for a week, leaving the good eye unimpaired in its functions. Two years later he had another attack of the same nature.

One month ago the patient came to see me during an attack. The vision in the wounded eye was absolutely lost, not even light-perception being present. The eyeball was exquisitely sensitive to the touch and had been so at every previous attack. The pupil was closed and anterior synechiæ were present. A large scar at the upper border of the cornea indicated the site of the wound produced by the bullet. The eye was mushy and had shrunken considerably since the injury, and of course it was impossible to see the fundus. The conjunctiva of the eyeball was very red, and the secretion of tears abundant.

The singular and at the same time most interesting feature of the case was the condition of the right eye. The ocular conjunctiva was very red, and a superficial keratitis, limited to a small part of the cornea, was present. No involvement of the iris. The lens and vitreous were clear and nothing abnormal was to be seen in the fundus. The eye was painful and very sensitive to light. Vision was necessarily much interfered with by reason of the corneal complication. I advised the patient to have the injured eye enucleated. He consented and I immediately performed the operation. Just within the angle formed by the junction of the eyeball and the optic nerve, on the temporal side of the latter, the bullet was found. It had gone through the eye and its point of exit was marked by a narrow band of cicatricial tissue at the point where it had lain for so many years. The eyeball was cut open and found to be so much disorganized that it was impossible to make out the relative positions of the parts.

It was a matter of regret to me that it was not practicable at the time to make cultures from the inside of the eye, to ascertain whether the pain and the disease going on within were due to the presence of microörganisms. These, if found, must have made their entrance into the ball many years ago, for the hole made by the bullet had closed very soon after the accident, since which time there had been no opening into the eye. Though I did not regard the trouble in the injured eye as one of infectious origin, still if the presence of organisms could have been proven, an interesting, and at the same time valuable, fact would be established, namely, that microörganisms can remain quiescent for a number of years in an eye and at intervals give rise to all the symptoms of an acute inflammation.

It may be well, however, to state in this connection that two years ago, while making experiments on sympathetic ophthalmia, I had occasion to examine a number of eyes which had been enucleated on account of the danger of sympathetic disease, and in one eye only—in which the injury was of two weeks' duration—did I discover organisms, a fact which has led me to think that the agency of microörganisms in the causation of sympathetic ophthalmia can be excluded if the sympathetic disturbance appears as late as from two to three months after the injury.

As soon as the injured eye was removed the other eye recovered without treatment. The disease here could not have been of a parasitic nature, or the deeper structures of the eye would probably have been first involved. That the trouble in the second eye was either caused, or, in part, kept up by the presence of the injured eye, together with the bullet which was near, was evident on account of the disappearance of the sympathetic disturbance when the injured eye and the bullet was removed. Such a case of sympathetic ophthalmia I would look upon as due to the ciliary irritation kept up by the presence of the injured eye, and not to the passage of organisms from one eye to the other. Indeed, the infectious origin of sympathetic ophthalmia, in my opinion, is far from proved.

The road along which sympathetic irritation travels is a most complex one. It is composed of

[1] Read before the Clinical Society of Maryland, February 6, 1891.

the short ciliary nerves, which come from the ciliary ganglion, and of the nerves which enter into the composition of this ganglion, namely, one from the nasal branch of the ophthalmic, another from the third nerve, and still another from the sympathetic. Among these the nerves which have most to do with the sympathetic irritation are the fibres derived from the fifth and from the sympathetic. It is evident, then, that the irritation must pass along an eccentric course before it reaches the second eye. In order to establish the *rôle* of the ciliary nerves in the transmission of the sympathetic process it should be possible to put a stop to this process by cutting these nerves. The theory would then be proved. I quote the two following cases, which occurred in the practice of M. Abadie:

In the first a wound of the cornea through which the iris protruded had been caused by a piece of broken glass. The hernia of the iris, however, was excised, and the eye recovered, when suddenly there appeared in the other eye all the symptoms of a sympathetic inflammation, photophobia, ciliary and pericorneal injection, and, finally, irido-cyclitis, with posterior synechiæ. At this time the fundus showed nothing pathological, and it was plain that the inflammation was provoked and kept up by a certain degree of ciliary irritation; the symptoms which indicated this more especially were the excessive vascular injection and the pain on pressure in the ciliary region. After closely observing the case for a few days, M. Abadie determined to make a section of the ciliary nerves, as he was convinced that they were concerned in the transmission of the disease. The operation was performed, and immediately afterward the pain disappeared, as if by magic, and though sleep had been almost impossible before, the patient slept well the first night following the operation. The injection of the eyeball soon passed away, and recovery was rapid and perfect.

The second case, which was not less instructive than the one just described, showed the speedy relief afforded by an operation. In this case there was a relapse which necessitated a second operation, this being followed by complete recovery. These two cases apparently show that the sympathetic process can be removed by section of the ciliary nerves.

It would seem, then, that we have two forms of sympathetic ophthalmia, first, a ciliary or reflex form, under which head the cases here reported would come; and second, a variety of the disease the pathology of which is still in doubt. Their points of difference may be summed up as follows: In the ciliary variety of sympathetic ophthalmia the photophobia, lachrymation, and ciliary pains are most intense; and then, too, a fact noted by many surgeons, there is a spot which is particularly sensitive to pressure, and which occupies the same locality in each eye, namely, some point in the ciliary region. Here the process commences in the iris and ciliary region, while the vitreous and fundus of the eye generally remain healthy and only become involved secondarily. In this variety the disease manifests itself at periods varying from two and three months to fifteen and twenty years after injury of the first eye. In the other variety the sympathetic process appears more promptly, generally in from two to six weeks, and though the subjective symptoms are less intense than in the ciliary form, the former variety goes on more rapidly to destruction of the eye.

In the latter variety the fundus is first involved, and we notice a papillitis, soon followed by opacities in the vitreous, deposits on Descemet's membrane, and, finally, irido-cyclitis. I do not call this latter an infectious form of sympathetic ophthalmia, for the existence of such a variety of the disease rests on too uncertain proof. Both varieties are, in the majority of cases, to be traced to wounds, all of which are more or less of an infectious nature; and though in the ciliary form of sympathetic ophthalmia there is less likelihood that infection plays a *rôle* than in the other variety, yet I do not think that experiments in this direction would warrant us in designating either variety of the disease as distinctively infectious. It is evident that had the disease in the two cases reported by M. Abadie been of an infectious character simple section of the ciliary nerves would not have given relief.

ON THE VALUE OF FÆCAL VOMITING AS AN INDEX OF ACUTE INTESTINAL OBSTRUCTION.

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IN the treatment of intestinal obstruction the most common cause of failure is the inability of the attending physician to arrive at a positive and correct diagnosis before the time for operative relief has passed. This difficulty of diagnosis has become notorious.

Given a case of local abdominal pain, gradually becoming general, of soreness spreading over the abdomen, of tympanites, of vomiting and obstinate constipation, who can say positively whether it is a case of general or local peritonitis, of ulceration and perforation of the bowel, of abscess without the peritoneum, of bilious colic from gall-stones, of fæcal impaction, or of some form of acute obstruction which demands an operation. In many such cases the diagnosis may be impossible during life, or at least until a late stage of the disorder, but occasionally the symptoms may be so positive and unmis-

takable that the practitioner who fails to recognize them must be responsible for a fatal result. It is important then to recognize all of the symptoms met with in a case of obstruction at once; we must also remember that all of the classical symptoms are rarely met with in one case, and that occasionally the great majority, if not all of them, are absent.

Acute intestinal obstruction may cause local or general pain, vomiting, tenesmus, constipation, tumefaction of the abdomen, tympanites, colic, disturbance of respiration and pulse, increased or diminished temperature, and finally paralysis and collapse. The symptoms necessary to make a diagnosis are the pain and soreness, tumefaction and tympanites, tenesmus and constipation, and vomiting. I think the profession should get rid of the impression that pain, tenderness, and tympanites of the abdomen necessarily indicate peritonitis.

I have frequently operated upon ovarian tumors in cases where, from the previous occurrence of sharp agonizing local pain accompanied with tympanites, lasting several days, I had expected adhesions, and have been happily disappointed in not finding the slightest trace of an inflammatory process, either on the smooth wall of the cyst or on the parietal or visceral peritoneum. I have operated for intestinal obstruction in cases, in which the diagnosis of general peritonitis had been made, to find only a circumscribed local inflammation at the seat of obstruction. The occurrence of general pain and tenderness over the abdomen, in cases of strangulated hernia, are symptoms which no one accustomed to deal with these cases, would think for a moment of attributing to peritonitis.

I am at present treating a patient with a syphilitic stricture of the bowel, and am obliged to keep his bowels open with frequent doses of cathartic medicine. When I fail to do so his abdomen becomes tympanitic and very sore. Abdominal pain and tenderness and tumefaction may arise from a multitude of conditions and is pathognomonic of none.

Small circumscribed tumors may arise more or less suddenly from perityphlitis or other localized inflammations, from intussusception and more rarely volvulus, from impaction of fæces, from the presence of foreign bodies in the gut, and from the rapid formation of cysts or tumors. Tumors of long standing may not be discovered until attention is directed to the part by the presence of pain. Tympanites may result from peritonitis, septic poisoning, indigestion, hysteria, paralysis, and acute or chronic obstruction. Tumefaction in itself can not be regarded as a symptom of great diagnostic value. Tenesmus may occur as the result of obstruction, but as it is met with in a great variety of irritative conditions of the bowel, it becomes of importance as a symptom only in cases of intussusception where it is associated with the rapid formation of a well-defined tumor.

Obstinate constipation, which does not yield to the free and repeated use of cathartics, is too often accepted by many practitioners as a symptom of obstruction.

Nothing could be more delusive. Obstinate and unyielding constipation may be met with in peritonitis, perityphlitis, paralytic conditions, high fevers, in many obscure disorders of digestion, and in acute or chronic opium poisoning. In the last case of perityphlitis on which I operated there was obstinate constipation which had not yielded to drastic cathartics given prior to my arrival. I have seen badly wounded men in the army killed by the injudicious use of purgatives, given to overcome constipation due to high fever and irritation caused by severe wounds. I recall one case in particular of amputation at the shoulder-joint in which constipation lasted several days in spite of repeated enormous doses of purgatives. Finally, at the end of the fifth day, the fever subsided and was succeeded by a fatal diarrhœa which could not be checked.

I think the constipation in these cases is due to paralysis of the intestines produced by the severe shock, irritation, and fever caused by the wound. Recovery from the paralysis is followed by absorption of the purgatives which produces hypercatharsis. I cannot too strongly express my disapprobation of the indiscriminate and repeated use of powerful purgatives in cases in which constipation is associated with tympanites or tenderness of the bowels. Purgatives may occasionally do good, but in these cases are more frequently harmful, and when there is intestinal obstruction they are always contraindicated.

The peristaltic action excited by the drugs forces that part of the gut above the obstruction down and doubles it over the constriction. If it be a case of intussusception a still larger portion of the bowel is invaginated. In any case the congestion at the seat of stricture is greatly increased and the death of the bowel is hastened.

Vomiting is a common symptom in many diseases and is of diagnostic value in intestinal obstruction only when its cause can be detected, or when it assumes a stercoraceous character. Fæcal or fœtid vomiting is, however, a symptom of the greatest value and the gravest import. In my own experience I have never seen it except in intestinal obstruction. I regard it, indeed, as the only symptom which taken alone is always pathognomonic of this condition, I have become convinced of this from bitter experience. Within the last six months I have lost three patients, after desperate operations, undertaken too late for the relief of obstruction, every one of whom had vomited stercoraceous

matter for days before the operation. One of these patients, who had a strangulated hernia, had been dosed liberally with pills and salines. Another case, a young married woman, had had an attack of peritonitis some years before I saw her. When I was called she had been ill for more than a week and had vomited fæcal matter for five days. The operation was performed *in extremis;* her pulse was 110 and her skin was cold and clammy. During the operation her respiration ceased several times, and she was kept alive with difficulty. I found the small intestines bound down and bent by a firm whip-cord band of false membrane, which I could not break, but which I cut between two ligatures. The vomiting ceased after the operation, but she never rallied from her state of extreme nervous exhaustion, and died six hours after the operation. The third patient had suffered from *la grippe*, which was followed by cough and constipation, associated with chills and fever. On Wednesday, March 19, 1890, he had chills and fever, and again on the 20th, when the family physician, a very intelligent practitioner of medicine, was called. The patient's temperature was 103° and he had slight pain in the bowels and very severe headache. On the 21st, he had a chill, headache, and slight pain in the bowels. There was a subsidence in the fever on the 22d. Pills of aloin, strychnia, and belladonna were administered, followed by an enema, but they produced no effect upon the bowels. On the 23d, no change, except nausea and vomiting, which was checked by milk and lime-water. On the 24th, there was a free movement of the bowels after an enema; the nausea was not so intense. On the 25th, there was another fæcal movement after an enema; the patient vomited matter which emitted a foul but not fæcal odor. On the 27th, vomiting continued and I was called in consultation. When I saw him his pulse was fair but the skin was cold and clammy, and there was paralysis of the capillaries which is so often the forerunner of death. He vomited a brown fluid which had a horrible putrid odor, but could not be called fæcal. I operated as soon as possible and found the small intestine twisted on its axis and there was a quantity of fœtid matter in the folds produced by the volvulus. When untwisted the bowels were found to be paralyzed, and could not be made to respond to any stimulus. A part of the intestine which seemed to be almost gangrenous, was excised and the gut reunited. At the close of the operation there was no difference in the general condition of the patient, and he died at 6 P.M. of the same day. The family physician recognized the possibilities of the case as soon as the vomiting of foul matter occurred, but as its odor, though putrid, was not fæcal, he hesitated until the golden opportunity had passed, and the operation was performed too late.

Fœtid odor of the vomited matter has the same significance, under certain circumstances, as that of fæcal odor. It means that intestinal obstruction has reached a high degree and that relief or death must soon follow. But some of my colleagues will say that a fœtid breath is of common occurrence in gastric troubles in which there is no question of obstruction. This is doubtless true, but suppose that a man with a breath of ordinary sweetness is seized with pain, constipation, and vomiting, that the ejecta at first have only the sour odor of half digested food, or perhaps no odor at all, and that finally after the vomiting has continued for some time it assumes suddenly an extremely fœtid character, then it always means intestinal obstruction. Fœtid breath often comes from nasal catarrh, necrosis of bone, rotten teeth, or fermenting food in the stomach. In cases of caries, necrosis of bone, and rotten teeth, the odor of the breath might not be communicated to the vomit. In cases of gastric fermentation in which there is continued vomiting, the stomach would soon be emptied of all the fœtid material, and the later ejecta would be less fœtid than the earlier. In intestinal obstruction the reverse of this occurs. The vomit becomes more and more fœtid the longer it continues. While the occurrence of fæcal or fœtid vomiting positively indicates operative procedures it is unfortunate that in the majority of cases this symptom is not present. The surgeon, therefore, must not wait for this symptom before operating when other symptoms of obstruction are present. Although other symptoms, taken singly, may point to various disorders other than obstruction, their combination enables the surgeon to come at once to a correct conclusion. Abdominal pain, tenderness, and vomiting are of plain import, if associated with an irreducible hernia. Tenesmus, abdominal pain, and the rapid formation of a tumor in the rectum or abdomen is also diagnostic of intussusception.

Fæcal or fœtid vomiting indicates almost without exception obstruction of the bowels and warns the surgeon of the necessity of an immediate operation for the relief of the patient.

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"PRISM-DIOPTRE" vs. "CENTRAD" IN THE REFORMED NUMERATION OF PRISMS.

BY B. ALEXANDER RANDALL, A.M., M.D.
OF PHILADELPHIA.

IN the *Ophthalmic Review* for January, Dr. Swan M. Burnett contributes a recommendation of the "prism-dioptre" for the numbering of prisms in ophthalmology, and denies to the other units proposed any such accuracy, convenience, and valuable relations as he claims for Mr. Prentice's proposed unit. The endorsement by a vote of the American

Ophthalmological Society last year of the "centrad" proposed by Dr. Dennett is characterized as hasty and mistaken; so it seems not improper that, as the mover of that vote, I should make an answer to his criticism.

We need for the designation of prisms a system that shall be accurate, simple, and practicable; and it is exceedingly desirable that it shall be intimately related to our reformed numeration of lenses, to the effect of decentering lenses, and to the "metre-angle" of convergence which corresponds with the "dioptre" of accommodation. Dr. Burnett advocates, as furnishing the desired unit, the "prism-dioptre"—a prism deviating a ray of light falling at right angles upon one of its faces through the space of 1 cm., measured upon the tangent-plane 1 metre distant—and says, in the matter of prisms, "'approximations' cannot be long tolerated."

A prism produces an angular deviation of the rays of light passing through it, and the size of this angle of deviation measures the strength or the effect of the prism. This may be expressed in terms of angle, of arc, of tangent, or of sine; but only the first two, which are interchangeable, are uniform. The prism-dioptre, which is a tangent measurement, declines in value with each increase of the angle, until near the right angle it grows infinitesimal. Even at the starting point it is but an "approximation" to what we wish to express; and it condemns itself, since 10 prism-dioptres are less than 10×1 P. D., 20 P. D. $= 19.3 \times 1$ P. D., 40 P. D. $= 35 \times 1$ P. D. The unit endorsed by the American Ophthalmological Society is uniform, and represents 0.57295° of angle or arc at every part of the circle.

The important "metre-angle" varies with each individual variation in the distance between the centres of rotation of the eyes, and has in the past needed more calculation than was convenient in clinical work. Mr. Prentice deserves our hearty thanks for pointing out its relation to his prism-dioptre. He shows that approximately, within narrow limits, the value of the metre-angle is expressed by half the distance between the pupils measured in centimetres. Yet he admits that it is far astray for high values, since for an inter-pupillary width of 64 mm. (the average of the books, though wide for American faces) 20 m.-a. would correspond with 83.4 P. D., instead of 64; and, conversely, 64 P. D. would express less than 17 m.-a., not 20. Even for eyes as close as 50 mm. 10 m.-a. would be erroneously expressed in prism-dioptres by as much as 3 per cent. The metre-angle is measured accurately under all circumstances by the "centrad" system approved by the American Ophthalmological Society; and even in this off-hand statement, obtained from half the inter-pupillary distance in centimetres, the approximation is very close. For 64 mm. and 20 m.-a. the "centrad"-reading on the arc is 69.46, and this is the real value: neither the corresponding 83.4 P. D. nor the 64 cm., which is twenty times half the inter-pupillary distance, directly express it; the former is its tangent, the latter its sine—from either it can be derived only by calculation. Yet, assuming for convenience that we may state metre-angles directly in terms of inter-pupillary distance, the above figures show how far better an approximation the centrad is than the prism-dioptre. Dr. Burnett implies that the prism-dioptre value is accurate, while he denies any relation of the centrad to the metre-angle. In both points he is manifestly in error.

In the decentring of lenses a prismatic effect is obtained, which is much used (unconsciously or intentionally) in ophthalmic practice, and deserves wider and closer study. This, Mr. Prentice claims, is accurately expressed in prism-dioptres, if the centimetres of decentring be multiplied into the strength of the lens in dioptres. I question if this be correct, although I fail to detect the flaw in his argument: the relation seems a matter of sine not of tangent, in which case the centrad system would again be closer the approximation. Certainly a 20 D. lens decentred 1 cm. (this probably exceeds the limits in practice) gives 20 centrads of deviation, as accurately as I can measure with improvised apparatus. The difference is small—20 P. D. $= 19.75$ Cr.—so at the worst the error in the use of the centrad in this relation does not compare with the gain at the other points.

Yet the centrad is impracticable, Dr. Burnett claims, because "neither Dr. Dennett nor any other advocate of the centrad has offered or devised any really practical method of measuring prisms according to the radian system." Dr. Burnett has befogged himself by importing into the centrad system the "minimum deviation," which has no place there. Like the prism-dioptre, the centrad is a prism which, at 1 m. distance, deflects the ray of light falling at right angles upon one of its faces through the space of 1 cm., the only difference being that the centrad is measured on the arc and not on the tangent. It is not "curious," therefore, that at first their values agree; they diverge because 20 Cr. $= 20 \times 1$ P. D., approximately, while 20 P. D. $= 19.3 \times 1$ P. D. The centrad may be measured on the tangent-plane at any distance with as much ease and accuracy as the prism-dioptre; only we must use the tangent-projection of centimetres of arc instead of even centimetres. But this calculation, though simple, may be avoided by measuring on the arc of the perimeter, with which nearly every oculist is provided. If its radius of

curvature be 30 cm., as in my instrument, every 3 cm. of the arc is 1 "centiradian," "centirad," or hundredth part of a "radian," and corresponds to 1 centrad. Fix the scale of Mr. Prentice's prisometer at, say, 25 cm., and curve it to this radius, and it will measure centrads with all the accuracy with which it now expresses the specious prism-dioptres: only 100 Cr. will not have a nominal value of 157, as is the case with the prism-dioptre. The oculist needs but to add a prism-holder and a vernier to his perimeter, and he has no need for the additional instrument.

To the optician there will be no recognizable difference between the centrad and the prism-dioptre. He will buy from the wholesale manufacturer, or will grind for himself, prisms of 1°, 2°, 3°, 5° refracting angle as before, just as many still handle lenses ground to inches of radius. When they differ distinctly from the strength required, he will lay them aside to fill the orders of the hair-splitter who calls for hundredths of a centrad, or will polish them down to true strength. Dr. Burnett's assumption that the centrad is indivisible and that only exact whole numbers can be employed is gratuitous, to say the least.

Yet the advantages of the "radian" system do not end (as with prism-dioptres) in the designation of prisms. This is but a part of its value in ophthalmology as in most mathematical work. The radian can everywhere replace the degree in designating arcs or angles. The deviation of a squinting eye is best measured on the perimeter, and better in "centirads" than in degrees. The field of fixation can be given conveniently in the same terms and the extreme limits of the visual field also. All values relating to the directions of the optic axis and vision, central or peripheral, monocular or binocular, can be well expressed in this system, which is far from limited to questions of "velocity" only, as Dr. Burnett states in his special pleading. More: the position of the cylinder-axis may be expressed in the same notation, although 157 + Cr. may be less convenient than 90° to express the vertical. Yet as many ophthalmologists reject the trigonometric notation now generally accepted, and insist on taking the zero point anywhere except at the "three o'clock" used by all mathematicians, we might secure uniformity by abandoning all degree terms and starting fresh in centirads.

Therefore, in urging the American Ophthalmological Society to adopt the centrad as the unit, I did not lead them into a hasty mistake; but, with Mr. Prentice's prisometer on the table before us, and with recognition of his valuable suggestion as to the metre-angle, a better standard than his was endorsed. The centrad has practically every advantage claimed for the prism-dioptre, without its inaccuracies; it can hardly be called, like its rival, an arbitrary choice; and it is in accord, not only with practical and scientific ophthalmology, but also with the most advanced mathematical science.

CAMPHORIC ACID IN NIGHT-SWEATS.

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WITHIN the last eighteen months Combemale has published the results which he has obtained from the employment of camphoric acid and the tellurate of sodium in the treatment of the night-sweats of phthisis, or those dependent upon some other severe systemic disorder. I have been so frequently misled by the enthusiastic reports of clinical observers both in Germany and France as to the value of some new remedy which they had tried, that I must confess to have taken up camphoric acid with a considerable degree of prejudice against it. I have studied its action, however, very carefully in the wards of St. Agnes's Hospital during the last six weeks, and I am now prepared to most thoroughly endorse everything which Combemale has said about this drug. I believe it to be of greater utility than any of the remedies which have heretofore been generally employed, such as atropine, aromatic sulphuric acid, and sponging with alum or sulphuric acid water, or similar preparations. Altogether I have given it to about ten cases, and in every one of them it has acted, even if given in moderate dose, most satisfactorily. The following history of two cases are about as good examples of these clinical facts as I can offer:

A man, aged thirty-five, was brought into the hospital in the early part of January suffering from advanced phthisis with a large cavity at the left apex and with numerous smaller cavities in both lungs. There was a good deal of expectoration of purulent matter and a loose, racking cough, rapidly progressing emaciation, with that peculiar flattening of the wrist which we so often see, so that the forearms looked like laths, and with such persistent and aggravated night-sweats that the occurrence of each sweat could be seen to increase very markedly his debility and asthenia. So severe was the effect of these sweats that I could always tell on entering the ward whether he had one the night before, and on one or two occasions I was shocked to notice what terrible changes had taken place during the past twenty-four hours. All the anti-sudorific remedies which I could think of were employed, without any avail or with only a slight decrease in the quantity of the sweat. Finally, in despair, I turned to camphoric acid and ordered that twenty grains of the drug should be administered stirred up in a little milk or placed upon the tongue and washed down with water one hour before the time at which the sweat generally came on, namely, at one o'clock in the morning. To

make a long story short, I can only add that during the remaining four weeks the drug absolutely controlled all sweating, although it was only given once in every twenty-four or forty-eight hours—thereby greatly increasing the patient's comfort and undoubtedly prolonging his life. It is also worthy of remark that this drug did not seem to decrease the other secretions, such as the saliva, or to cause the uncomfortable drying of the throat and feverishness of the skin so characteristic of full doses of belladonna.

The second case was that of a woman, aged twenty-five, suffering from pulmonary phthisis of a more chronic form than that of the case which I just detailed. In this case also the sweats were very annoying, producing insomnia and loss of strength, although they did not seem to be productive of as much debility as in the case of the man. In this instance, also, camphoric acid in the dose of 20 grains produced a most pleasing effect, completely controlling the sweating. I may also add that I have employed the drug in cases of nervous exhaustion and general debility accompanied with excessive sweating with considerable success.

When we consider that the dose of 20 grains of camphoric acid is only a third of what may be given in cases where this dose fails, namely, 60 grains, it becomes evident that the drug requires a more general trial by the profession, and that it will probably take a prominent place in the list of our materia medica. It is absolutely devoid of taste, insoluble in water, and comes in small micaceous crystals, which are soluble in alcohol. It does not produce the gastric irritation and burning produced by camphor, and in none of the cases in which I have employed it has it ever occasioned any distress or untoward symptoms.

As yet I have not had an opportunity to test the therapeutic activity of the tellurate of sodium, and I can say nothing, therefore, in regard to its value. Combemale states that while it is useful in night-sweats it is not equal to camphoric acid in power, and I am so well satisfied with the latter drug that I shall only try the tellurate of sodium when I find a case in which camphoric acid fails.

ORIGINAL LECTURES.

PREPARATION FOR ABDOMINAL SECTION—HERNIA AS A SEQUEL.

A Clinical Lecture.

By E. E. MONTGOMERY, M.D.,
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Gentlemen: I propose to spend a portion of the hour in the discussion of abdominal surgery and the preparation to be made for the operation. This is a comparatively new branch of surgery, and dealing as it does with the largest serous and absorbing membrane of the body it requires the greatest care and precision in the preparation for operation. It is a field in which we may justly feel proud of the accomplishments of American surgeons. In reviewing the literature of the subject we find it well established that the first operations for the relief of ovarian growths were done by that courageous backwoodsman, Ephraim McDowell, of Kentucky, in the year 1809. He performed nine operations. Although the operation was subsequently done in isolated cases by Nathan Smith, of this country, by Lizars and Clay, of England, it was not until Atlee, of this city; Dunlap, of Springfield, Ohio; Kimball, of Mass.; and Peaslee, of New York, entered upon their brilliant work that the profession recognized the importance of the procedure. When we consider what these men went through in braving public and professional opinion we cannot but admire their courage and feel that they deserve to be immortalized.

In the extension of this department of surgery we find the names of Battey, urging the removal of ovaries for diseased conditions and for the purpose of bringing about the menopause artificially; Marion Sims, urging the opening of the abdomen in all injuries in which the abdominal viscera are likely to be affected; seconded by the work of such men as Bull, Davis, Barrow, and others. In lauding the work of American surgeons we have no wish to discredit the work of Spencer Wells, Tait, Hegar, Schroeder, Keith and many others, who deserve to be mentioned for their original work. Of the intestinal work alone, Prof. Goodman has said that had our present knowledge of the mode of treating intestinal injuries been known and practised at the time of our civil war, many hundreds of valuable lives might have been saved. At present there is no portion of the abdominal cavity or its viscera that has not been the subject of operation.

In preparation for the operation we have first to consider the patient. Of course, it is understood that the patient has been carefully examined, that the conditions of the various organs of the body are known so far as an examination of the secretions and excretions can enlighten us; and the surgeon is satisfied that the operation is one which is for the best interests of the patient. It is exceedingly important that the secretions of the patient should be in as healthy a condition as possible in order to favor the elimination of the poisonous products that may develop during convalescence; hence, we exercise precaution with regard to the diet of the patient, that the food shall be nourishing, and yet of such a character as shall furnish the least amount of waste material; that the alimentary canal shall be thoroughly emptied by purgatives, preferably saline, which cause a free watery discharge. The skin of the patient, not only the parts about the site of the operation, but of the whole body, should be carefully bathed and cleansed with a view of increasing its action. The skin of the abdomen, the external genitals, and the pit of the umbilicus should be carefully bathed and repeatedly cleansed. This should be done with soap and hot water, using a nail or flesh brush freely, and in those cases in which there is much sebaceous material wash the skin with ether. For a few hours prior to the operation the abdomen should be covered with a cloth wet in a solution of acid sublimate (1 to 1000). In the majority of

cases it is advisable to shave the pubes and the lower abdomen. This should be done, preferably, before the last cleansing, as there is then less danger of having loose hair about the wound during the operation. This precaution is one that is not infrequently neglected. I have assisted gentlemen in operations, when to my astonishment I would find them all ready to make the incision without having given the abdomen any preparation, and have seen it covered with sebaceous material, exfoliated epithelium, and oftentimes with the remains of plasters and applications that had been made to the surface.

We must consider the room in which the operation is to be done, and in which the patient is to remain. It should be performed in a well-lighted, well-ventilated room, one which has been thoroughly cleansed, and is free from carpets and hangings. In it the preparations for the operation should have been made, so that when the patient is brought in under the influence of the anæsthetic, everything is at hand that may be needed during the progress of a complicated operation, as it is very unfortunate to have an operation interrupted to procure instruments or material, which may have been imperfectly prepared for use. The room in which the patient remains subsequent to the operation should also be well heated, ventilated, and lighted, and should be one in which the patient can be kept quiet and undisturbed. No stationary washstand should be present. It is not unusual to find operators exercising every care and precaution in the ways we have already mentioned, and yet failing in others which are equally important. I recently assisted a gentlemen in performing an operation in which he had cleansed the furniture of the room with carbolic acid, had the atmosphere so impregnated with it that it was difficult to breathe, yet when it came to preparation for the operation he was poorly provided with antiseptic sponges, had his suturing material placed upon a syringe box which had not been disinfected, and used silk fresh from the store without sterilizing to ligate the pedicle. I do not mention this instance with a view of discrediting the work of another, but simply to impress upon you the importance of exercising precaution in the minutiæ, and leaving nothing undone by which the interests of the patient may be promoted.

One of the most important subjects for consideration is that of sponges. These should be of suitable size for ordinary sponging, and where large incisions are to be made there should be in addition a number of large flat ones. These sponges as procured from the shops are usually filled with sand, dirt, and particles of lime, and require careful preparation. They should be first carefully pounded to break up the lime and particles of shell. This should be done by placing the sponge in a towel and beating it. They should then be immersed in a solution of dilute muriatic acid, one ounce to the quart of water, for several hours, after which they should be washed in water until the acid is removed and then cleansed by washing in green soap (sapo viridis), and then washed in water until the soap is entirely removed. After this place in a five-per-cent. solution of carbolic acid and keep until used. Sponges may be used repeatedly if properly cleansed. Recleansing may be done by washing in a solution of green soap or placing the sponges in a solution of hyposulphite of soda, one pound to the gallon of water, to which is added half a pound of oxalic acid. This produces a double decomposition by which sulphur and sulphurous acid are set free. By this change the fibrine and animal material is burned out, and the sponge is in addition bleached so that it presents a much better appearance than when treated in any other way. It will require repeated washing of the sponge to get rid of the sulphur deposited in it, but when it is removed, we are certain that the sponges are clean. They may then be placed in the carbolized solution and kept for use.

During the past year I have used catgut very largely for ligatures and sutures. The occurrence of abscesses in a few cases, however, has led me to feel that it was not a material upon which we could thoroughly rely. The difficulty, particularly in the thicker catgut, is that we are unable to know how carefully it has originally been cleansed and prepared. The manner in which I have prepared it, has been to place the catgut in ether, allowing it to remain for from twenty-four to forty-eight hours, in order to dissolve out fatty substances that may be present. Then it is placed in a five-per-cent. solution of carbolic acid in which one grain of bichromate of potash to the ounce has been dissolved, in which it remains for from twenty-four to forty-eight hours longer, according to the size of the catgut, after which it is placed in absolute alcohol and kept for use. Lately, I have returned to the use of twisted Chinese silk, having this either boiled for an hour or placed for a number of hours in a solution of acid sublimate (1 to 1000), after which it is placed in absolute alcohol to be kept for use.

Now, it is very important to watch carefully your assistant in the removal of the ligatures from the receptacle in which they have been placed. He should be instructed to carefully cleanse and disinfect his hands, to take the ligature out and place it in a vessel containing hot water, being careful not to permit any portion of it to come in contact with table, clothing, or extraneous material by which it may be infected with pathogenic germs. The sutures should be threaded into the needle from the hot water. Precautions should be observed as the sutures are introduced, that the surface with which they come in contact should be one that has been thoroughly sterilized. For this purpose we thoroughly surround the line of incision with towels that have been wrung out of an antiseptic solution, preferably the acid sublimate; after these have been soiled they should be replaced with clean ones before the sutures are introduced.

Now, in performing the operation, the operator stands on one side of the patient. In my operations you will notice that I prefer to stand on the left side. The principal assistant on the opposite side should be a person who is ready and willing to follow the directions of the operator, to anticipate his wishes, and yet not to be officious and attempt to do that which is the work of his superior. He should be a person who is cool and calm in an emergency. The second assistant administers the anæsthetic; he should be accustomed to its use, and be depended upon to keep the patient under its influence with as little expenditure of the agent as possible. The other assistant, who may be, ordinarily, a trained nurse, takes care of the sponges. She should have two basins for this purpose; into one the spoiled sponges are thrown,

washed out, and placed in the other, ready to be handed to the assistant. It is well to have an additional assistant, not to handle the instruments, but to be prepared for emergencies, to have ready Paquelin's thermo-cautery or other preparations that may be needed. The instruments are upon a table to the right of the operator where he can reach them without assistance. The patient, thoroughly anæsthetized, is placed upon a prepared table; the abdomen is exposed, surrounded and covered, except where the incision is to be made, by antiseptic towels. As a preparation for the operation, the instruments have been thoroughly cleansed, placed in pans, and covered with hot water.

The first step in the operation is the incision through the abdominal parietes; this is made as nearly as possible in the median line in order to reach the linea alba. It should be made with a scalpel through the skin and superficial fascia down to the aponeurosis, by the first, or, at most, the second sweep of the knife. The extent of this has been determined by previous examination of the thickness of the abdomen. The aponeurosis is opened, and the further incision made by probe-pointed angular scissors, by which the tissues can be cut quickly and safely through to the peritoneum. The peritoneum is raised up by forceps in order to prevent injury to the intestines or to any growth within its cavity. Then, after opening, with a finger introduced as a director, the incision is extended the length of that through the walls. I will not take time now to discuss the methods of operating after the abdomen has been opened, as I prefer to do this when I have before you a patient suffering from a condition requiring abdominal section.

I now bring before you a patient who has undergone an operation some eighteen months since. Her history previous to the operation is rather vague, as she is unable to give the reason for its performance. She, however, now comes to us she says suffering greater distress than before. The operation was performed for the removal of her uterine appendages. She did not menstruate for seven months after the operation, and during this time was quite comfortable. She now menstruates regularly, and suffers a great deal of pain and distress. Prior to and during the flow she complains of burning distress and pain in the inguinal region as well as over the pubes. In looking at the abdomen you will see the cicatrix of an incision some five inches in length. This is an unusually long incision to make for the simple removal of the appendages. One inch from the lower part you will see a slight protrusion, which is increased in straining or in coughing. As the patient now coughs you will see that this protrusion becomes considerably larger; and when I press upon this I can distinctly feel something disappearing before my finger as it is passed into the abdomen. I find an opening through the muscular walls into which the point of the finger can be introduced. This condition is one that is known as ventral hernia, and is not infrequent after abdominal incision where precautions have not been taken in the closure of the wound to carefully approximate the edges of the incised aponeurosis. In this patient the aponeurosis above and below this are firmly united. I find that she has suffered during convalescence from an abscess in the wound, probably a stitch abscess, which continued open for several months. To this is due, probably, the weakened condition of this portion of the ventrum.

This subject of closing abdominal wounds is so important that I feel that it is to your interest that I should speak particularly of the method of introducing the sutures. The mistake is commonly made of introducing the sutures at some distance, say one-half an inch, from the edge of the peritoneum on either side. If we grasp the incised surface between the fingers the sutures may be introduced without bringing up or passing through the muscular portion of the wall at all, simply involving the peritoneum, the superficial fascia and skin, and such an approximation must necessarily result in a weak ventrum. Then, too, where a large portion of the peritoneum is included in the suture and a large portion of the skin, the peritoneum may be everted, the skin inverted, and but very little tissue intervenes in opposition between the respective edges. The proper plan of procedure is to so introduce the sutures that the edges of the peritoneum are brought in apposition, the aponeurosis and muscular wall thrown well together, and the edges of the skin simply approximated. In this way we are certain to have a firm cicatrix, with but very little danger of hernia.

This patient entered the hospital with the expectation of undergoing an operation for the relief of this hernia, but upon careful inquiry into her history, I fear it would be necessary to perform an operation with a view of relieving the probable adhesions that have occurred in the abdominal cavity. If it had been simply the relief of the hernia, I should have endeavored to have made an incision to one side of the protrusion, dissected or pushed off the peritoneum without opening it, then pushed it back through the opening, and freshened the edges of the aponeurosis, and have brought these together with sutures. But finding that this would not be sufficient to relieve the internal distress, I have concluded to defer operation for the present. This is particularly on account of the condition of the hospital, which, as you know, is undergoing alteration, and does not afford us an opportunity to give this patient a room suitably prepared for a critical operation.

It is very important in performing abdominal operations to use care that adhesions may not result which may very much increase the distress from which a patient may suffer. In all cases in which there have been adhesions, or where the peritoneum has been denuded for an extensive surface, or in which there have been pus sacs removed, drainage is absolutely demanded. Where the adhesions have been extensive, and there is danger of their re-formation, the cavity should be treated wet rather than dry. The introduction through the drainage-tube at frequent intervals of a solution of boroglyceride prevents the decomposition of the fluid contained in the perineal cavity, permits the intestines to roll over each other with layers of fluid intervening between them, and favors the granulation of the denuded peritoneum, so that cases thus treated may recover without the development of any adhesions.

Commencements.—The commencement exercises of the Jefferson Medical College will be held April 15th, and of the University of Pennsylvania May 1st.

PREPARATION FOR LAPAROTOMY.

Extracts from a Clinical Lecture, delivered at the Cincinnati Hospital.

BY THADDEUS A. REAMY, M.D., LL.D.,
PROFESSOR OF CLINICAL GYNECOLOGY IN THE MEDICAL COLLEGE OF OHIO; GYNECOLOGIST TO THE CINCINNATI AND GOOD SAMARITAN HOSPITALS OF CINCINNATI.

GENTLEMEN: Two weeks since I removed the tubes and ovaries from this patient in your presence. Seven days after the operation she was again brought before you with all sutures removed from the abdominal walls and the wound united by first intention.

The next patient I bring before you is the woman from whom I removed a thirty-five-pound multilocular ovarian cyst. She has no fever or pain, and the abdominal wound is closed except where the drainage-tube was inserted, at which point there is slight suppuration. The sutures have all been removed and the woman is out of danger.

You have seen during the past two years the abdominal cavity repeatedly opened in this amphitheatre on my table, which stands in the same place occupied by the operating-table of my friends and colleagues, the general surgeons, with all classes of surgical cases. Moreover my clinics are attended by a large class, made up of students from the different colleges of the city, many of whom are probably just from the dissecting-room, and yet my patients suffer no infection.

You are probably anxious to know what special antiseptic methods are adopted to secure these results. The answer to this inquiry is *cleanliness*. The patient, operator, assistants, nurses, sponges, instruments, water, dressings, and everything used in connection with the operation must be perfectly clean.

Let me call attention to points which I regard as important in the preparation for an operation of the character under consideration.

First, the diagnosis having been made and the operation determined upon, the patient should remain in the hospital from five to ten days before the operation is performed. This is important in order that she may become acquainted with her nurse and her physician, and acquire confidence in them; also that she may become accustomed to her surroundings and that her bowels may be properly and thoroughly evacuated, and that in other ways she may be prepared for the operation.

At the time of her entrance to the hospital she should receive a thorough bath, including shampooing of the head, and thorough scrubbing of the external genitalia, and all parts of the body covered by hair. She should have each day before the operation a sponge bath, and her vagina should be syringed thoroughly with warm soap-suds, followed by a ten-per-cent. solution of carbolic acid, or a bichloride of mercury solution, 1 : 1000.

The day before the operation her bowels should be evacuated by sulphate of magnesia. On the morning of the operation, but several hours before it, the lower bowel should be washed out by an enema of warm salt water. Just before the operation the abdomen should be thoroughly cleansed and rubbed with a 1 : 1000 bichloride solution, or a five-per-cent. solution of carbolic acid.

When the patient is placed upon the table the lower extremities should be well wrapped in blankets, but the stockings should not be removed. Her chest and arms must be well protected, and only the field of operation exposed. Some surgeons place a piece of macintosh with a slit in it along the proposed line of incision, but I think this is objectionable. Warm towels protect the parts well above and below the line of incision.

The operator's hands should be washed thoroughly with a nail-brush and soap in warm water, the water being changed repeatedly until there is no possibility of uncleanness. The operator's assistant, and the nurse who is to handle the sponges, must observe the same methods of cleansing.

The water used in these ablutions, and that used for cleansing the sponges, instruments, and for irrigating the peritoneal cavity should either be filtered and boiled or should be distilled. The receptacles for the sponges and instruments must be thoroughly clean.

I have recently seen an operator use absorbent cotton instead of sponges, which is only mentioned to be condemned. Soft clean sponges of the Smyrna variety should be used. Ordinarily those cup-shaped are most suitable. No sponge that has been cut or torn should be employed. For protection of the omentum and the intestines from injury by the needle in closing the abdominal wall, as well as for receiving the blood caused by the penetration of the wall by the closing needle, the flat silky sponge, called the elephantine sponge because of its resemblance to an elephant's ear, is much to be preferred. Of course, I assume that your new sponges have been thoroughly cleansed and are aseptic.

I am in the habit of using the same set of sponges in six or eight laparotomies.

Immediately after an operation they must be thoroughly washed in warm water, then placed in a strong alkaline solution, soda being as good as any, which must be changed until all albuminous matter has been removed; several days are required for this process. They are now carefully washed in plain warm water, and must then be kept for a day or two in a five-per-cent. solution of carbolic acid. When taken from this solution they are to be placed in a clean linen bag and hung in a room where they remain until the next operation. Before commencing an operation the sponges are washed out in warm water and are ready for use. The odor of carbolic acid remains quite perceptible though they may remain in the dry bag a month.

Good silk thread is hard to obtain. The so-called Chinese silk is not very reliable and braided silk is objectionable. I have of late used exclusively silk obtained either in Birmingham or London, which gives perfect satisfaction. It is hard, twisted and contains no cotton. It is important that there should be no cotton in the thread, for a pure silk ligature will, in the course of six to twelve months, be absorbed, being an animal product; while if it contains cotton it may not be absorbed, and may give trouble.

The pedicle ligature should be of as small size as consistent with proper strength. The silk to be used, both for ligating the pedicle and for closing the abdominal wound, is boiled in plain water for half an hour and then dried, just before an operation, by artificial heat.

I have already stated that no chemicals of any character are to be placed in the water employed for

cleansing the peritoneal cavity. In simple tubal and ovarian cases no water is poured into the abdominal cavity.

After thoroughly cleansing and drying, oil the abdominal wound; long adhesive strips are applied, followed by pads of absorbent cotton and mosquito netting. Neither moist dressings nor antiseptics are used. The wound is not examined until the fourth day.

In closing this lecture I wish to reiterate that the main object in abdominal surgery is *cleanliness*.

MEDICAL PROGRESS.

Treatment of Psoriasis.—Fabry has employed hydroxylamine in the treatment of psoriasis with good results. The prescription is as follows:

℞.—Hydroxylamine muriate . . 3–5 grains.
Spirits of wine . . . . 1½ ounces.
Carbonate of calcium, a sufficient quantity to neutralize.

Or,

℞.—Hydroxylamine muriate . . 15 grains.
Pure water . . . . 1½ ounces.
Calcium carbonate, a sufficient quantity to neutralize.

Guttman is said to cure psoriasis in seven days by the employment of a ten-per-cent. ointment of hydracetin.—*Wiener medicinische Presse.*

Treatment of Acne.—Isaac recommends in the treatment of acne the following prescription:

℞.—Powdered chalk . . . 1 drachm.
Beta naphthol, Camphor, Vaseline } of each . . . 2½ drachms.
Green soap . . . . 4 "
Precipitated sulphur . . . 1½ "

Equally good results may be reached by employing a ten- to twenty-per-cent. ointment of resorcin.—*Wiener medicinische Presse.*

Treatment of Eczema.—The *Wiener medicinische Presse* states that Cerasi employs the following ointment or wash in the treatment of impetiginous eczema:

℞.—Picric acid . . . . 4 grains.
Sulphuric ether, enough to dissolve it.
Lanolin . . . . . 18 drachms.

Or,

℞.—Picric acid . . . . 7 to 15 grains.
Sulphuric ether, a sufficient quantity to make a solution.
Rose-water . . . . 5 ounces.

Transmission of Tuberculosis from Mother to Fœtus.—Csokar has recently presented to the Imperial Society of Physicians in Vienna a pathological specimen which he believes proves with certainty that the bacillus of tuberculosis may pass into the fœtus from a tubercular mother. A cow which was advanced in pregnancy suffered from pulmonary tuberculosis and died from this disease. The fœtus showed, in its hepato-duodenal ligament, lymphatic glands which were partly caseous and partly calcified. There were a large number of tubercles and round cells with the tubercle bacilli. The fact that infection occurs through the umbilical vessels Csokar thinks of interest.

Treatment of Diphtheria.—In St. Bartholomew's Hospital reports for 1890, which have just been published, may be found a paper by Ogle and Willoughby upon this subject. The patients upon whom the study was based numbered twenty-two and occurred in the wards of Sir Dyce Duckworth. The cases were all extremely grave and the operation of tracheotomy was only resorted to when other measures appeared unavailing. The importance of early recourse to this operation is emphasized; the main indication for it being cyanosis. Ogle insists very strongly upon the use of a spray of a solution of bicarbonate of sodium with borax, in the proportions of ten grains of each to the ounce of water, for the purpose of disintegrating the membrane. Its employment is usually followed by the expectoration of creamy mucus containing shreds of membrane. Papain solution also proved very serviceable. The value of free stimulation was marked in all the cases, brandy being given in a dose varying from one to three ounces mixed with milk, beef or mutton essence and yolk of egg every four hours by means of a soft nasal tube. Jelly and custard were the first articles of food given by the mouth. The medicines employed were perchloride of iron and strychnine in full doses. These observers think that the importance of feeding by the nose in the early period after tracheotomy is not as yet fully appreciated.

Injections for Gonorrhœa and Leucorrhœa.—According to *L'Union Médicale*, Lutaud recommends the following prescription in gonorrhœa and leucorrhœa in the later stages of these diseases:

℞.—Creolin . . . . . ½ drachm.
Extract of hydrastis canadensis 2½ drachms.
Water . . . . . 8 ounces.

Add two teaspoonfuls to a pint of hot water and use as an injection in leucorrhœa. In gonorrhœa in the male the following formula is useful:

℞.—Creolin . . . . . 10 drops.
Extract of hydrastis canadensis ½ drachm.
Distilled water . . . . 8 ounces.

This solution is to be employed without dilution as a urethral injection.

Treatment of Syphilitic Pharyngitis.—According to *L'Union Médicale*, Crequy has used with great success the following tablets of the protiodide of mercury and chlorate and iodate of potassium in the treatment of mucous patches in the mouth and pharynx:

℞.—Protiodide of mercury . . ¼ grain.
Chlorate of potassium . . 3 grains.
Iodate of potassium . . . ¼ grain.
Chocolate, a sufficient quantity to make a tablet.

One or two of these tablets may be taken each day after a meal. Care, of course, should be taken that severe mercurialism does not result.

CURRENT LITERATURE.

SATURDAY, APRIL 4, 1891.

TREATMENT OF PLACENTA PRÆVIA.

EVERKE says the cause of placenta prævia is to be found in the possibility of the ovum falling from the fundus to the cervix, and developing there. Hence it is more frequent in multiparæ with large uterine cavities, and especially when previous catarrh has made the mucous membrane smooth. Everke has observed placenta prævia in such a patient three times in succession.

Hæmorrhage constitutes the greatest danger to the mother. The open vessels at the seat of the placenta easily absorb septic matter, and hence women with placenta prævia are especially subject to puerperal septicæmia. The danger to the child, of course, is from asphyxia.

Bleeding may occur in two ways. In the latter months of pregnancy the lower uterine segment may be drawn upward, and the placenta, being unable to stretch as much as this part of the uterus, may be separated from its base of attachment. In labor the placenta is separated by the dilating pains.

Treatment must meet two indications, first to save the mother from death by hæmorrhage, and second, to rescue the child from its threatening position. The first must be achieved, if necessary, by the sacrifice of the child. The physician who pays least attention to the child's life will save the life of the most mothers.

If the pains are strong, the position of the fœtus longitudinal, and the mouth of the womb dilated to the size of a five-mark piece, the bleeding can usually be controlled by rupturing the membranes. As soon as the membranes are ruptured the tearing of the lower pole of the ovum ceases, and there is no further loosening of the placenta. The uterine contractions press the presenting part against the os and the placenta, and the bleeding surfaces are effectually tamponed. Birth is then usually spontaneous. Rupture of the bag of waters is contra-indicated when the pains are weak, and when the os is not sufficiently dilated, as then tamponing would not occur, and version would be rendered more difficult.

Version is performed in placenta prævia with the view of making compression upon the bleeding spot. If the os is almost or completely dilated, the hand can be easily introduced and either rupture the membranes at the side of the placenta, or perforate the placenta, and bring down a foot. In all such cases the bleeding usually ceases. If hæmorrhage still continues, gentle traction should be made upon the foot. When the fœtal heart-sounds are good, slow extraction should follow version, as rapid extraction is a source of danger to the mother by producing atony of the uterus.

If the os is sufficiently dilated to admit two fingers, the mother may be saved from her dangerous position by two procedures—*accouchement forcé* and combined version. The first is recommended by Spiegelberg, and consists in slowly stretching the os from below backward, which is generally yielding in these cases, using first two, then three, and then four fingers. The hand of the accoucheur thus acts as a preliminary tampon. After careful stretching of the os, the hand is introduced into the uterine cavity, the foot grasped, and the fœtus turned. This procedure is only to be undertaken when the os is soft and yielding, and is always dangerous, as the cervix may be torn, followed by death of the woman from cervical hæmorrhage after the child's birth. Hence this method has been generally superseded by Braxton Hicks's method of combined version. Everke thinks this method the best, as it permits of early intervention, and can be performed with only one or two fingers within the os. The woman, therefore, loses but little blood, and so has left greater resisting power. It is certain, also, to control the bleeding. Post-partum hæmorrhage and cervical tears are avoided, the uterus is evacuated gradually, and no uterine atony results, and, as subsequent tamponing to control hæmorrhage is no longer necessary, the danger of septic infection is obviated. By the old method, in which tampons were sometimes employed for days while the os slowly dilated, there was great danger of septic infection because of the proximity of the tampons to the large placental vessels. This explains many deaths which have occurred in the puerperium; nevertheless tamponing is still necessary in rare cases in which the os is not dilated sufficiently to admit one or two fingers, and in which the os is so rigid that it cannot be easily stretched. When tamponing is necessary it should be preceded by careful cleansing of the genitalia, evacuation of the bladder, and washing out of the vagina. Strips of iodoform gauze should be pushed in rapidly, being followed by pledgets of cotton, so as to fill the vagina as soon as possible. In a few hours the cotton is removed, by which time usually the os is sufficiently dilated to permit of the termination of labor.

If the physician does not feel sufficient confidence in himself to perform combined version, he may succeed by external version, if the membranes are intact, the child small, and the head not fixed.

Hæmorrhage after birth should be rare, if extraction is slow. If it occur, however, the cause should be sought for. If there are lacerations, these should be repaired, and if atony exist, tamponing, according to Dührssen's method, is the surest, simplest and safest way of overcoming it. In cases in which placenta prævia is recognized in pregnancy, Everke recommends the induction of premature labor, on account of the liability to sudden hæmorrhage, which may occur when medical aid is not at hand. Labor should then be induced by the gradual introduction of one or two fingers, and the foot seized and brought down. In one case Everke was unable to grasp the foot after the induction of premature labor and external version, as only one finger could be introduced. He thereupon inserted a Sims speculum, fixed the os with two bullet-forceps, and then grasped the foot with a pair of dressing forceps,

and, so, easily drew it into the cervical canal. No further bleeding occurred, and the fœtus was delivered in about twelve hours.

The dangers of anæmia are to be overcome by infusion of salt solution, either into the veins or into the cellular tissue, as recommended by Münchmeyer. —*Therapeutische Monatshefte*, February, 1891.

OBSERVATIONS UPON THE ETIOLOGY OF ACUTE ARTICULAR RHEUMATISM.

Waibel remarks upon the growing belief in the supposition, first expressed by Hirsch, that acute articular rheumatism is an infectious disease. The exciting cause of the disease, which is yet undiscovered, cannot affect individuals entirely healthy, but only such as are in a depraved state, or are under special or general injurious influences. The predisposing injurious influences of a general nature are: The season of the year, and the prevailing meteorological conditions, as well as various other unhygienic conditions. The predisposing factors affecting individuals are: Age, sex, vocation; whether the person lives in the city or country, or has passed through a previous attack of rheumatism; heredity, and diseases of the mucous membrane of the digestive tract.

Waibel admits that his experience is limited to one hundred and twenty-one cases of rheumatism, but as he has been able to study these in person and to follow the patients into their dwellings, and so study the etiology with greater care, these facts make up for the relative paucity of numbers. These one hundred and twenty-one cases occurred in sixteen years, from 1874 to 1889 inclusive. There were more attacks in January and March than in other months, and the fewest in September. As regards season, more occurred in winter and spring. So far Waibel's statistics agree with the general experience of other observers, and appear to indicate that cold and wet operate to produce rheumatism. The writer, however, denies that they have any direct influence, but says they may act by favoring the growth and development of the cause of the disease. He also thinks it very probable that meteorological conditions favor the spread of the exciting cause of rheumatism in the same manner as they do the microörganisms of other diseases.

He says the indirect influence of meteorological conditions are much more important than the direct. In very bad weather men remain more at home, and the result is the crowding together of a number of persons in badly-ventilated rooms, in which the air and the floors are foul, not only from soiled and wet clothing, but also because the lighting, heating, cooking, and washing are all done in the living-room. In addition to these causes there are often found in these houses decomposing animal and vegetable materials and excreta, which also vitiate the atmosphere and contribute to the development and growth of disease germs. The patient generally attributes the attack to cold, which belief is deeply rooted in the minds of both physicians and laymen, partly from ignorance and partly from long-established habit.

Waibel's investigations as to the position, moisture, and age of the dwellings in which cases of acute articular rheumatism developed, are surprising. He finds that more cases occur in the high, dry, and old houses. Of his one hundred and twenty-one cases, eighty-two occurred in houses in high situations, as opposed to thirty-nine in low-lying houses; ninety-three in dry, and only twenty-eight in moist houses; one hundred and fifteen in old, and six in new houses.

Sex has no influence; sixty cases occurring in men and sixty-one in women. As regards age, more cases occurred in the decades from ten to twenty and from thirty to forty, and fewer in the decades from sixty to eighty.

Seventy-four of the patients were hard laborers belonging to the agricultural and industrial classes, while forty-seven were not over-exerted by their work. No special calling, however, appeared to predispose to rheumatism. Waibel has observed very few cases in factory hands, notwithstanding the fact that they are poorly clad, and frequently have to travel long distances in cold and wet weather, and then stand long hours in wet shoes and clothing. This exemption is, in his opinion, due to the fact that they do not have to work very hard, and also because they are away from their dwellings during the whole day.

Kunz's statistics of the morbidity for the cities of Swabia and Neuberg for 1884 indicate that acute articular rheumatism affects about equally the industrial and agricultural classes, while the house servants are more affected. According to the same statistics for 1885, the industrial were more affected than the agricultural laborers, aud of the former more cases occurred among brewers, joiners, and millers. A large number of cases occurred among soldiers.

According to Professor Strümpell, servant girls, waiters, and coachmen are especially disposed to acute articular rheumatism.

As regards residence in city or country, seventy-nine of Waibel's cases occurred in city-dwellers and forty-two in people living in the country. His statistics give no information as to the influence of heredity, although he suggests it may have an influence through the transmission of a weakened constitution. A previous attack is a well-known predisposing cause. The greatest number of attacks observed in one patient was seven in fifteen years, two of them occurring in one year.

Waibel has frequently observed that disturbances of the digestive tract precede an attack of rheumatism, and he thinks it very probable that this favors the invasion of the disease-germ. His observations do not warrant him in expressing a positive opinion as to the contagiousness of rheumatism. He thinks it highly probable that the contagium belongs to the contagious-miasmatic class of infections. He has never seen anything which justified the belief that rheumatism is epidemic. There has, however, been an increase of the disease in the past ten years, a fact which has also been observed by Port, in the Bavarian garrison.—*Münchener med. Wochenschrift*, February 3, 1891.

PLEURISY IN CHILDREN AND ITS TREATMENT.

Simon, in *Le Progrès Médical*, January 31, 1891, says that typical pleurisy with well-marked symptoms is of extreme rarity in children. In them it is rare to observe other than secondary pleurisies, consecutive either to lesions of the lungs, pneumonia, broncho-pneumonia, tuberculosis, or to the infectious diseases, measles, whooping-cough, scarlet and typhoid fevers. Together with the pleural inflammation, there is nearly always a simultaneous inflammation of the bronchi and lung. The pleurisy presents a most remarkable tendency to encystment, which renders the diagnosis very difficult. Several of the symptoms which are prominent in the adult are absent in the child. Thus, in the beginning, instead of complaining of pain at some point in the side, the child complains of a pain in the abdomen, or in the flank. Its respiration is accelerated, the respiratory movements reaching the number of 30 to 40 per minute; the temperature rises to 38° or 38.5° C. The child coughs a little, and seems to suffer in coughing. On inspection, the affected side is more or less immobile, its movements being limited. A little later, when the effusion is increased, the side shows a slight bulging. Percussion, when the effusion is abundant, gives an extended dulness. On auscultating the chest, the friction—the important initial sign in the adult—is hardly ever perceived in the child. When it is heard, it is in the late period, that of resolution. An important symptom is the suppression of the vesicular murmur, a suppression which makes a strong contrast to the puerile respiration of the healthy side. The pain in the belly, the fever, the dyspnœa, the extended dulness, and the suppression of the vesicular murmur, are the prominent symptoms of the early stage.

The frequent association of the disease with an inflammation of the bronchi and lungs renders the diagnosis a matter of great difficulty. However, the duration of the malady will reveal its nature. A frank pneumonia will be recognized in some days; a broncho-pneumonia, even, does not persist during three or four weeks with this fixity of position. A pleurisy, however, remains localized for five or six weeks, or longer. The termination is usually by suppuration, the fever persisting with irregular oscillations; at no time, however, tending to exceed 38.5° C. It is important to note this relatively low temperature, which exists notwithstanding the suppuration. Pus, once formed, shows even a greater tendency to encystment than does a serous effusion. The seat of this encystment may be posteriorly or anteriorly, in the axilla, in the middle portion of the chest, or even under the clavicle. After its encystment it frequently discharges spontaneously, either toward the skin, or toward the bronchi, or simultaneously toward the bronchi and skin. The prognosis of pleurisy in the child is relatively very favorable. Its gravity at first depends upon the associated broncho-pneumonia. Later, when there is suppuration, death may ensue from cachexia, asphyxia, or opening of the abscess into the pericardium or mediastinum, if the effusion is unrecognized. But if the diagnosis is made, if proper treatment is instituted, cure ordinarily follows, even in the gravest cases, such as secondary pleurisies, pleurisies associated with profound cachexia, or even double pleurisies.

The treatment in the first stage should be hygienic and medical. Avoidance of chilling of the surface, and the use of hot drinks, with calomel one-sixth to three-quarters of a grain every two or three days to produce a slight laxative effect, and digitalis, ten to twenty drops of the tincture, as a diuretic and antiphlogistic. In the second stage, when pus has formed, it may be necessary to perform thoracentesis. The point of election for the puncture will usually be in front of the axillary line, instead of, as in the adult, at the union of the posterior third and the anterior two-thirds. Thorough antisepsis should be practised, to avoid further infection of the system. If necessary, an incision should be made and thorough drainage instituted, antiseptic precautions being observed.

REVIEWS.

Saunders's Question Compends: Essentials of Surgery. By Edward Martin, M.D. Fourth Edition. Illustrated, Revised and Enlarged, with an Appendix of Prescriptions, etc. Philadelphia: W. B. Saunders, 1891.

The fact that Dr. Martin's question-book upon Surgery has passed in two years through three large editions, and that the publisher has found it necessary to issue another addition at this season of the year, points to its popularity not only with students but with a certain number of physicians. It is useless for us to repeat the commendations which were called forth by the earlier editions, and it only remains to call attention to the exceedingly useful appendix which has been added to the present issue, which contains a large number of prescriptions applicable to many diseases, and in addition a list of drugs and materials used in antiseptic surgery, together with general directions concerning preparations for antiseptic procedures. The average practitioner and the student will find this last portion of the book equally attractive with the first, and we are convinced that the fourth edition will be as thoroughly appreciated as its predecessors.

Diabetes: its Causes, Symptoms and Treatment. By Charles W. Purdy, M.D. Illustrated. Philadelphia: F. A. Davis, 1890.

The subject of diabetes is one of such universal interest to medical men that any book which deeply yet clearly discusses the causes, symptoms, and treatment of this disease cannot fail to be popular with physicians. While many monographs have been published which have dealt with the subject of diabetes, we know of none which so thoroughly considers its relations to the geographical conditions which exist in the United States, nor which is more complete in its summary of the symptomatology and treatment of this affection. A number of tables showing the percentage of sugar in a very

large number of alcoholic beverages adds very considerably to the value of the work.

The Year-book of Treatment for 1891. A Critical Review for Practitioners of Medicine and Surgery. Philadelphia: Lea Bros. & Co., 1891.

To most of the subscribers of The Medical News the *Year-book of Treatment* is a familiar publication, and well worthy of a place upon the desk of every practising physician. The present year-book differs from its predecessors in that it is almost twice as large, and therefore contains a more complete *résumé* of the therapeutic literature of 1890. Under the skilful handling of Dr. T. Mitchell Bruce, the first article in the volume, upon "Diseases of the Heart and Circulation," serves the excellent purpose of making one familiar with the latest studies concerning this important portion of the body when affected by disease, and it is only necessary to state that among the other contributors are such men as Malcolm Morris, Edmund Owen, Reginald Harrison, and James Ross, to make one feel that the princes of English medicine have gathered together for their medical brethren all that is good, to the exclusion of everything that is useless.

CORRESPONDENCE.

NEW YORK.

As might naturally be expected, this winter has witnessed the presentation of an unusual number of papers on the subject of tuberculosis; but even before the memorable announcement of Koch's great discovery of the lymph treatment, I had been struck with the value of some of the papers which have been presented here to some of our medical societies, showing the direction of current thought. Whatever may be said in the way of criticism of these investigations, and of the conclusions which have been drawn from them, it is certainly most refreshing to learn that a diagnosis of phthisis is no longer to be considered as necessarily synonymous with the death-knell of the patient. It is also encouraging to be told that these new and optimistic views are not based upon some recent and fantastic method of treatment, but are founded upon a patient study of Nature's methods of bringing about a cure of tuberculous processes under favorable conditions.

One of these suggestive papers was entitled, "Some of the Facts in the Etiology of Tuberculosis," and embodied the results of experiments which had been made by Dr. H. P. Loomis. In his communication, which was read before the Bellevue Alumni Association, he narrated the histories of a number of cases in which the bronchial nodes or glands were the primary seat of lesion. In one case, that of a vigorous man who died in an attack of acute lobar pneumonia, the autopsy, made a few hours after death, showed that the organs were normal, and no evidences of tuberculosis existed except in the enlargement of the bronchial nodes, and even these presented no gross lesions of tuberculosis. The existence of tuberculous material in these nodes was, however, proven by inoculation experiments. As the determination of the bacilli in the sputum in cases where these organisms are present in small numbers is a matter of considerable difficulty, and one into which the personal equation enters very largely, Dr. Loomis preferred to make use of inoculation experiments to ascertain the presence of tuberculous material. A series of thirty autopsies made upon persons dying of acute diseases, or as a result of violence, showed that eight had tubercle bacilli in the bronchial nodes, although none of them exhibited any evidences of tuberculosis anywhere else. In the discussion which followed the reading of this paper, Dr. H. M. Biggs said that there seemed to be no organ or tissue in the body which might not be primarily affected by tuberculosis. In the autopsies which he had made at the various charity hospitals of this city, he had found that 60 per cent. of all the deaths occurring in these institutions showed tubercular lesions, and yet less than one-half of these had died of tuberculosis. He had been informed that in the Vienna General Hospital such lesions were found in 85 per cent. of all the autopsies. That this was not simply a dead-house view of the subject was apparent when one recalled that Dr. Austin Flint's large clinical experience had led him to a very similar conclusion.

I mention some of the more important points brought out in this discussion, because it was a most fitting preliminary to the study of the treatment by Koch's "lymph," which only ten days later was made known to the world. This matter of the "lymph" treatment has been so fully set forth to your readers that doubtless they feel that it is time to cry "enough;" but I think it will not be without interest to them to read a statement of the results obtained so far in the use of this "lymph" by Professor A. L. Loomis. It is well known that this gentleman is not easily aroused to such a pitch of enthusiasm that it will prevent him from discussing dispassionately and scientifically the results obtained in any new departure in therapeutics. I have heard him speak of his cases from time to time, and he has fully sustained his reputation in this particular. A few days ago he exhibited to his students two men who had been under Koch's treatment for a period of five weeks. Both of them had unmistakable physical signs of phthisis at the beginning of the treatment, along with tubercle bacilli in their sputum. One of them had received in all thirty-two injections, the dose at first being one milligramme, but afterward it was increased to five. At first his physical signs were aggravated, but for the last three weeks he had steadily improved, and the physical signs were now very slight. The patient had gained eight pounds in flesh. The second patient received altogether seventeen injections in varying doses, the largest being ten milligrammes. A similar change for the worse was noticed in the physical signs in his case after the first injections, but the signs of consolidation had almost entirely disappeared, as had also the bacilli from his sputum, and he had gained twelve pounds in weight. Two plans of treatment—viz., small doses at short intervals and large doses at longer intervals—had both been tried, but there was apparently no great difference in the effect, except that the reaction after the small doses was naturally less severe.

I have been unable to learn of any deaths which have been considered, on good medical authority, to have

been directly due to the injections of the "lymph," but a number of deaths among patients in the advanced stages of tuberculosis who were undergoing this treatment have been reported. It is reasonable to suppose that in such debilitated subjects, the injections of this fluid, as Professor Loomis distinctly states, exerting so powerful a depressing effect upon the heart and system generally, may have hastened the fatal issue. Whether this be true or not, it is hard to say on what grounds one officious coroner has felt called upon to issue notices to the effect that he will investigate all deaths occurring in patients undergoing this treatment. There is certainly nothing in the law which defines the functions of the coroner which can be so construed.

There is, of course, much difference of opinion as to the effects of the injections, but it is significant that those who have had most to do with this treatment are in general most emphatic in stating that the method of Koch should only be employed in hospitals, where the cases can be closely watched and intelligently nursed.

It goes almost without saying, that special hospitals for carrying out this treatment will be speedily established, and I have to note that the first one of this kind in this city was opened on February 4th. It is called the Koch Institute, and is under the charge of Dr. Alexander I. Aronson. The building will accomodate thirty-five patients, but no cases of advanced disease will be taken, as they are obviously unsuited for this treatment.

I have had considerable to say in recent communications about the new building of our Academy of Medicine. The prosperity of the Academy seems to have fully justified the efforts made to secure this new and beautiful home. It was the scene of another pleasant gathering some weeks ago, to listen to the inaugural address of its President, Dr. Alfred L. Loomis. The property of the Academy is now valued at about $400,000, with a debt of only $30,000. The membership is rapidly increasing, and many of the more energetic members are anxious to concentrate and centralize medical thought and influence here. To aid in carrying out this wish, the President suggested in his address that the various private medical societies which now divert the energy of the profession into many different channels, should be taken into the Academy as sections, where they would be more honored and more influential.

The address also contained two other important suggestions as to the future work of the Academy, viz.—first, that it should establish a reliable nurse bureau, and, secondly, that it should issue a monthly bulletin of its "transactions," somewhat after the plan adopted in a similar publication issued by Johns Hopkins. These latter propositions, I think, are likely to meet with favorable consideration, but the first suggestion will more than likely provoke much opposition.

ST. LOUIS.

COMMENCEMENT season is as eventful a time for the colleges as for the graduates.

On the 10th inst. the St. Louis College of Physicians and Surgeons held its twelfth annual commencement exercises at Memorial Hall. Sixty-eight diplomas were awarded to representatives of thirteen different States of the Union and two foreign countries.

On the 12th inst. at the same hall were held the forty-ninth annual commencement exercises of the St. Louis Medical College and the twenty-fifth of the Missouri Dental College. The medical graduates, after a three years' graded course, numbered sixteen. There were twenty-seven dental graduates.

The thirty-second annual commencement of the Homœopathic Medical College of St. Louis was held the same evening (March 12th) at Pickwick Hall. There were fifteen graduates, of whom three were ladies.

Saturday evening, March 14th, the Marion Sims College of Medicine held its first annual commencement exercises at Memorial Hall, graduating a class of thirty-one members. Over one hundred and fifty students have matriculated at that school during the last year, the largest number, it is claimed, ever enrolled at any medical college during the first year of its existence.

Tuesday, March 17th, the examinations will be held of applicants for positions as assistant physicians in the City and Female Hospitals; three positions are to be filled at the latter and eight at the former institution. These examinations are held at the offices of the Health Department in the City Building, under the direction of the medical members of the Board of Health, and are written examinations.

Quite a sensation has been caused by the outbreak of a smallpox epidemic in our city hospital within the last few days.

A man named Campbell was sent to the hospital with what was supposed to be malarial fever, and had been there three or four days before his ailment was recognized as smallpox. By that time others in the ward had become infected, and in all there have now been taken to the Quarantine Hospital from the City Hospital ten cases, together with a half-dozen others from outside. The first case has terminated fatally. The physicians and officers of the Health Department are putting forth every effort to trace out the associations of the cases which have been brought in from outside, with a view of preventing further extension of the disease if possible.

An interesting case against an accident insurance company is now before the United States Circuit Court here, involving some elements of special interest to the medical profession.

In November, 1888, Dr. George Bernays, of this city, cut his finger while performing a surgical operation. Erysipelas set in, and he died within thirty days. Mrs. Bernays demanded of the United States Mutual Accident Association the sum for which the doctor was insured, claiming that his death was the result of accident.

The company admit the cutting, but deny that he was seized with erysipelas then, claiming that he had had the disease nearly all his life. They claim further that as "there was no visible mark on his hand at the time of his death" there is no liability upon them to pay the insurance by reason of a stipulation in the contract or policy.

The rulings of the court and the final decree in this case will be of interest to physicians throughout the country, and will have a material effect upon the readiness of physicians to take accident insurance policies.

COLORADO FOR CONSUMPTIVES.

To the Editor of The Medical News,

Sir: The question, Where should a consumptive go? was asked me by one of my patients some four months since, and his rapid emaciation—averaging one and a half pounds' loss every week for six months—warned me that an immediate answer was of pressing importance. I had heard and read a little of the favorable influences exerted on this class of patients by the sunny and dry climate of Colorado Springs. I received the impression that probably there was no more favorable spot for the consumptive known within the boundaries of this country; but before deciding a question of such importance, I asked the advice of Professor William Pepper, who replied that he considered the removal of the patient to Colorado Springs the best thing that could be done. Preparations for the journey were hastily made, and within ten days we left Oxford, Pa., for Colorado Springs.

After four months' residence at this place, the emaciation has been arrested, and for a month past there has been an increase in weight, and an improvement in the lung disease, thus cheering the patient and giving him promise of final recovery.

The tendency of this case was rapidly downward, and there seemed no reasonable hope for a favorable change in the climate of the East. It is scarcely worth while for me to fill your pages with an account of the beneficial influences of the climate shown in this case. It is simply a repetition of what has occurred in many hundreds of cases during the past twenty years. There is scarcely a family living at Colorado Springs that has not in it a similar example of a life saved and restored to health by the invigorating atmosphere of this place.

I am sure no one can yet say positively to what the cure of so many cases of consumption is due. We see healthful climate, soil, and surroundings combined here as they are nowhere else. First, the town is situated on a plateau, the elevation of which is six thousand feet, protected on the north by bluffs and the Great Divide, and on the west and southwest by the Rocky Mountains, which average ten thousand feet or more in height, and on the south and east there is an unbroken expanse of plains for many hundreds of miles. The high elevation of the place and the consequent rarefaction of the atmosphere is undoubtedly beneficial to consumptives by causing habitual deep inspirations, in order that the blood shall be sufficiently oxygenated. The surroundings protect the city from severe northwest winds, and insure a purity of atmosphere which is not excelled. The cool nights of summer give refreshing sleep and rest, and the unclouded skies and bright sunshine of every winter day permit daily outdoor exercise throughout the winter. Even when the patients are too weak to leave the house the windows can be opened on many days, and thus they are benefited by the sunshine and fresh air.

Colorado Springs has under it a stratum of gravel between fifty and seventy feet in depth, in consequence of which mud is unknown, and the drives and walks are as dry and smooth as if made of concrete. While showers are not uncommon in May, June, and July, the sun is seldom clouded for more than an hour or two at a time and dews are almost unknown.

Colorado Springs is strictly a health resort, and the authorities have always wisely kept this in view, and have endeavored, in every possible manner, to add to the reputation and value of the city as a place for the sick. The streets are one hundred feet and the avenues one hundred and forty feet wide.

The water supply, of the purity of which there can be no question, comes from streams fed by melting snow from the mountain peaks and is sufficient for a city ten times the size of Colorado Springs. The sewerage system of the city is complete.

Compared with other Colorado cities, such as Denver, Pueblo, and Trinidad, this city must always be in the lead as a health resort, as it can never be a manufacturing place of much importance.

The mining and manufacturing industries have made Denver a great city, and will also place Trinidad and Pueblo in a few years among the great mining and manufacturing cities of the United States. For these reasons Denver, Pueblo, and Trinidad are objectionable as health resorts. The winds are higher and the winters colder in Denver, and the summer nights are not so cool as they are in Colorado Springs. The ground also becomes muddy after rains.

Pueblo and Trinidad are very hot and dusty in summer, and there is considerable mud after rains. Among the cities named, Colorado Springs is the only one that can claim to have an abundant and safe supply of drinking-water.

It is an admirable place for homes. Colorado Academy and Colorado College, both of which occupy a high place among the academies and colleges of this country, are situated here. A splendid system of graded schools is maintained, and the public school buildings are magnificent. Almost every religious denomination is represented, and each has a handsome church.

Among the public buildings are two large sanitariums and the State institution for the education of the deaf and dumb. The managers of the Printers' Home have secured eighty acres of land near the city on which their buildings will soon be erected. New electric street-cars now run at intervals of from ten to forty minutes to Manitou, Cheyenne, Canons, Broadmoor, Roswell, and Austin Bluffs. The street railway will soon be extended to all other near places of interest.

Six railroads enter the city and more are to be built. The population is about twelve thousand, and it is said that no other city of this size contains a more intelligent and moral class of people. The sale of liquors as a beverage, within the city limits, is prohibited.

As a place for business: I would like to caution those contemplating coming here and expecting to find employment. Many are sadly disappointed. Small resources are soon exhausted, and funds must be provided by the kind people of the place for the return of many unfortunates to their friends. Others are able to secure some kind of employment by which they can live, and some are so fortunate as to get into a profitable business and become wealthy.

A severe struggle to keep the wolf from the door is not conducive to restoration of health, and invalids should carefully consider this question before coming. For the poor, however, who are able and willing to accept any kind of honorable employment, and are

plucky and not easily discouraged, there is health and work here yet for many thousands.

S. W. MORRISON, M.D.

COLORADO SPRINGS, COLORADO.

NEWS ITEMS.

Medical Ophthalmoscopy.—Dr. George E. de Schweinitz has been appointed Lecturer on Medical Ophthalmoscopy in the University of Pennsylvania, in order that thorough instruction in the use of this important aid to diagnosis may be given to the students. In addition to his regular lectures, the class will be divided in such a way as to permit of individual teaching. The appointment is particularly appropriate, since Dr. de Schweinitz has for a number of years been greatly interested in this subject.

Meeting of the National Association of Railway Surgeons.—At the Kansas City meeting of the National Association of Railway Surgeons last year, it was decided to hold the next meeting at Buffalo, May 7th, 8th, and 9th of this year. But, on account of the meeting of the American Medical Association being set for the same time, it has been decided to change those dates, and to hold our next meeting at Buffalo, April 30th and May 1st and 2d, to which all railway surgeons are cordially invited. To all railway surgeons sending their names and addresses to the Corresponding Secretary, a copy of the constitution and programme will be sent. All those wishing to read papers should send in the titles of their papers without delay. For further information inquire of

A. G. GUMAER, M.D.,
Corresponding Secretary.

BUFFALO, N. Y.

Obituary.—DR. CHARLES T. PARKES, Professor of Surgery in the Rush Medical College of Chicago, and for many years one of the most prominent surgeons in the State of Illinois, died on March 28th, of pneumonia and pleurisy, after a very short illness. The beginning of his illness was an attack of influenza, which was ignored until it forced him to take to his bed.

Dr. Parkes was graduated from the University of Michigan in 1862, and was actively engaged in recruiting troops for some years. After this he took a degree in medicine from the Rush Medical College in 1867. In addition to having gained prominence as a medical teacher, he carried out a series of valuable experiments upon gunshot wounds of the abdomen. The scope of his clinical work was very wide, and a number of reports of his clinics have appeared in THE MEDICAL NEWS within the last two years.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM MARCH 24 TO MARCH 30, 1891.

HOFF, J. VAN R., *Captain and Assistant Surgeon.*—The leave of absence for seven days, granted in Orders No. 61, *c. s.*, Fort Riley, Kansas, is extended twenty-three days.—Par. 3, *S. O. 36, Department of the Missouri*, March 27, 1891.

By direction of the Acting Secretary of War, CHARLES R. GREENLEAF, *Lieutenant-Colonel and Assistant Medical Purveyor*, will proceed to New York City on public business, thence to Boston, Mass., to represent the Army Medical Department at the American Association for Physical Education, and, upon the completion of the duties contemplated, will return to his station in this city.—Par. 3, *S. O. 67, A. G. O., Washington, D. C.*, March 25, 1891.

By direction of the Acting Secretary of War, EUGENE L. SWIFT, *First Lieutenant and Assistant Surgeon*, now on duty at Fort Thomas, Arizona Territory, will report by letter to the commanding officer Fort Grant, Arizona Territory, for duty at that station, or at Fort Thomas, Arizona Territory, as the commanding officer may direct.—Par. 7, *S. O. 66, A. G. O., Washington*, March 24, 1891.

By direction of the Acting Secretary of War, the retirement from active service this date, by operation of law, of HENRY JOHNSON, *Captain and Medical Storekeeper*, under the provisions of the Act of Congress approved June 30, 1882, is announced.—Par. 5, *S. O. 66, Headquarters of the Army, A. G. O., Washington*, March 24, 1891.

By direction of the Acting Secretary of War, the leave of absence granted ROBERT J. GIBSON, *Captain and Assistant Surgeon*, in Special Orders No. 232, A. G. O., October 3, 1890, from this office, is extended one month.—Par. 10, *S. O. 65, A. G. O., Washington*, March 23, 1891.

By direction of the Acting Secretary of War, JOHN H. BARTHOLF, *Major and Surgeon*, now on duty at Plattsburgh Barracks, New York, will proceed to Fort Wayne, Michigan, and report in person to the commanding officer of that post for temporary duty.—Par. 7, *S. O. 64, A. G. O., Washington, D. C.*, March 21, 1891.

TILTON, HENRY R., *Major and Surgeon.*—Is hereby granted leave of absence for one month, on surgeon's certificate of disability.—Par. 5, *S. O. 56, Headquarters Division of the Atlantic*, March 21, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MARCH 28, 1891.

AMES, HOWARD E., *Passed Assistant Surgeon.*—Promoted to Surgeon, March 19, 1891.

WHITE, STEPHEN S., *Passed Assistant Surgeon.*—Ordered to the U. S. S. "Baltimore."

PICKERELL, GEORGE MCC., *Assistant Surgeon.*—Promoted to Passed Assistant Surgeon, March 25, 1891.

MARTIN, WILLIAM, *Surgeon.*—Ordered to Naval Rendezvous, San Francisco, Cal.

WHITE, C. H., *Medical Inspector.*—Appointed Fleet Surgeon Pacific Station.

HARRIS, H. N. T., *Assistant Surgeon.*—Ordered to the U. S. Receiving-ship "St. Louis."

PICKERELL, GEORGE MCC., *Passed Assistant Surgeon.*—Ordered to Naval Hospital, New York.

RUSH, C. W., *Passed Assistant Surgeon.*—Ordered for duty with the Inter-Continental Railway Commission.

OGDEN, F. N., *Passed Assistant Surgeon.*—Ordered for duty with the Inter-Continental Railway Commission.

NORTH, JAMES H., JR., *Assistant Surgeon.*—Ordered to the Navy Yard, New York.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication, or 250 reprints will be furnished instead of payment, provided request for reprints be noted by author at top of manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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ORIGINAL ARTICLES.

ON THE TREATMENT OF CHRONIC SUPPURATION OF THE MIDDLE-EAR.[1]

BY H. GRADLE, M.D.,
OF CHICAGO.

IN view of the frequency and danger of chronic suppuration of the middle ear, every practitioner ought to be familiar with its treatment. According to the experience of specialists, such, however, is not the case.

While every modern text-book on the ear gives the information of the method of treating this disease, to him who seeks it, still all the books do not lay down the general surgical principles underlying the treatment in a sufficiently impressive manner. On this account a discussion of the principles upon which the treatment should be based does not seem to me a useless repetition.

Suppuration of the middle ear is the result of infection. This statement, suggested by our knowledge of suppuration in general, is based on the special investigation of the secretion of the diseased middle ear by numerous observers.[2] These authorities all agree that in acute inflammation of the middle ear the most frequent microörganism is the diplococcus known as the cause of croupous pneumonia, either alone or in conjunction with other pus-producing microbes. In other instances one or the other or several of the varieties of micrococci which cause the more common forms of suppuration were found, with or without the proteus bacillus, and occasionally also the bacillus of blue pus. All these forms are known to possess pyogenic properties. Of the diplococcus of pneumonia it has been shown by Zaufal that when introduced into the middle ear of animals it can cause suppurative otitis.

In chronic suppuration of the middle ear (Kauthak) the diplococcus is no longer present. Indeed, we know that it can only lead a short life in the animal body. Its place has been taken by one or several of the other pyogenic microörganisms. Chronic suppuration of the middle ear is therefore very often a secondary infection, and quite commonly a mixed infection. Rohrer[1] claims that when the discharge is not fœtid in odor, only micrococci are present, while offensive odor indicates the work done by putrefactive bacilli.

The elimination of the pus producing microörganisms from the tissues is interfered with by stagnation of irritant pus. In general surgery it is a rule that suppuration ceases spontaneously when the pus can escape freely, at least where there is no complication with tuberculosis and where no mechanical disturbances interfering with the rest or nutrition of the parts exist. The irritation of foreign bodies prevents the onset of suppuration only in as far as it forms a lodging-place for germs. All this applies equally as well to the middle ear. We have here an irregularly-shaped cavity with various recesses. Among the latter the most important one is the attic of the tympanum separated from the main cavity by the ligaments of the ossicles or by adventitious membranes.

In all these nooks and corners pus can stagnate. As long as such retention is not prevented, the lining membrane cannot rid itself of the micrococci which have invaded it.

In practice we find that only a small proportion of the cases of acute suppuration of the middle ear heal spontaneously. The natural cure is most likely to occur in early childhood, and in those patients where the nasal or pharyngeal disorder which led to the ear disease was only transient. On the other hand, the more advanced the patient in age, the more permanent any co-existing naso-pharyngeal disease, and the more severe the infection, like scarlet fever, during the course of which the ear trouble occurred, the less favorable are the chances of a spontaneous cessation.

In order to aid the tissues in their elimination of the pus micrococci, it is necessary, *first*, to remove all stagnating pus; *second*, to render the pus which continues to form unirritating, and *third*, to correct any condition that either keeps up the infection or interferes with the nutrition of the ear.

Pus cannot be removed from the meatus in any more efficient way than by a syringe. Wiping with cotton, the dry method in vogue some years ago, is painful unless very skilfully done, and cannot clean out corners as does a stream of water. The syringe should have a thin nozzle which can be deeply

[1] Read before the Chicago Medical Society, January 19, 1891.

[2] Zaufal, Netter, Weichselbaum and others quoted in Scheibe, Arch. of Otology, 1890, p. 168. Levy and Schräder, Arch. f. exper. Pathol. und Pharmacol., Bd. 26, p. 223. Kauthak, Arch. of Otology, 1890, p. 25. Gradenigo, Centralbl. f. Bacteriologie, 1890.

[1] Morphologie d. Bakterien d. Ohres, etc., Zürich, 1889.

inserted into the meatus, and no force should be used in syringing. Rubber-bulb syringes or the tube of an irrigator can be more easily steadied than a piston syringe. Many of the so-called ear syringes, especially those with an olive-shaped nozzle, are useless. Unless unavoidable, syringing should never be intrusted to the patient. With a fairly large opening, especially in the lower part of the drumhead, it is generally not necessary to syringe out the drum cavity itself by introducing within it any canula. Under such circumstances a forcible current of air sent through the Eustachian tube with a Politzer bag and proper syringing of the meatus are usually sufficient to remove all retained pus. Whether this has been thoroughly accomplished can be most easily told in those cases in which the discharge is offensive in odor. If by the time of the second treatment the discharge has lost its odor our purpose has been attained. It can be set down as an absolute rule that no otorrhœa ever heals so long as the pus retains any odor of decomposition. On the other hand I have never met with a case of chronic suppuration of the middle ear with inodorous discharge which could not be controlled by persistent treatment, accompanied, when required, by attention to the nose or pharynx. When there is no odor present the only criterion of the efficacy of the treatment is the diminution of the discharge.

When the opening in the drumhead is so small or so high up that a current of water thrown into the meatus cannot remove all the retained pus, we can cleanse the middle ear either by irrigation through the Eustachian tube or by means of a canula inserted through the perforated membrane. It is no more unpleasant to the patient to force a warm saline solution than air through the Eustachian catheter, but it is more difficult. Beside, it cannot be done in every instance. Where there is suppuration of both ears it is easier to irrigate at once through both tubes by means of the nasal douche employed as in the Politzer method of inflation. Occasionally tubal irrigation shows its efficacy by washing out inspissated pus which previous syringing through the meatus had not been able to remove.

Often, however, we can reach pus accumulations more thoroughly by means of a fine tube inserted through the perforated membrane. Indeed, when the opening is in Schrapnell's membrane this is the only efficient method. For in suppuration of the attic of the tympanum this space is commonly separated from the cavity of the tympanum by adhesions and false membranes, and cannot be reached through the Eustachian tube. The silver tubes fitting hypodermic syringes are quite suitable for this purpose, the point being slightly curved in order that it may reach in all directions. Sometimes it becomes necessary to enlarge the opening in the drumhead. The canula can be used with greater steadiness and efficacy, if attached, by means of a flexible hose, to a syringe which the surgeon does not himself manipulate. Of course, it is necessary to use the speculum and illumination with such a canula. If, by any or all of these means, the discharge cannot be freed of its odor, there exists either caries with inaccessible clefts, where pus is retained, or the suppuration has involved the mastoid cells.

With thorough cleansing alone many cases of chronic suppuration of the middle ear will heal, though not all. We can, however, decidedly hasten the cure by the judicious use of antiseptics. The pus which continues to form after syringing is still irritant, and it is by checking further decomposition of this fresh pus, until the next time of treatment, that we deprive it, to some extent, of its noxious properties.

The use of antiseptic solutions instead of pure water for syringing is of doubtful advantage, for we cannot remove retained pus any better with the former than with the latter. The continuance of suppuration is due to the presence of microbes in the tissues themselves, where antiseptic syringing cannot reach them.

Where the discharge, however, is very offensive, it is more agreeable to the surgeon to employ a deodorizer like the permanganate of potassium.

In order to accomplish anything by means of antiseptics they must be left in the ear in excess in order to render the fresh pus bland. Aqueous or glycerin solutions are either inert for this purpose if weak, or unnecessarily irritating if concentrated. Peroxide of hydrogen is frequently used by some surgeons, but actual trial has convinced me that it is not superior to thorough irrigation. It aids only by decomposing with effervescence, and thus reaching mechanically further than careless syringing. The best means of preventing decomposition of fresh pus is by the use of an antiseptic in the form of a bland, dry powder, especially the one first introduced by Bezold, viz.: boric acid. Comparative trial has shown me that this can be rendered even more efficient by adding thereto *one-sixth of its weight of salicylic acid.* The addition of more than one-sixth its weight is too irritating. Although boric acid is scarcely a germicide, it checks decomposition when present in sufficient quantity. Salicylic acid possesses this property even to a greater extent, but when used alone it is too irritating. I have experimented somewhat with subnitrate of bismuth triturated with one-half per cent. of corrosive sublimate. This is perhaps equal to boracic acid, but not superior, except in those rare instances in which the insufflation of boric acid

is followed by a watery discharge lasting a few hours. Iodoform powder is absolutely useless for the present purpose, but may be employed to protect denuded surfaces in caries or after operations in the ear.

I have seen no reason to experiment to any extent with other substances in the treatment of chronic suppuration of the middle ear. For when we can remove all retained pus thoroughly and there are no complicating conditions, we can obtain a cure by the use of boric and salicylic acids as rapidly as we can expect it in view of the existing morbid conditions. It is not rare to find the discharge practically checked by a single treatment. Whenever a discharge free from odor is not at once influenced by the treatment, we must look for complicating conditions. Lately there has been considerable protest from the school of Schwartze, especially by Staake,[1] against the use of insufflations of boric acid. It is claimed that the powder, by blocking small perforations, may lead to retention of pus and even fatal consequences. Undoubtedly there is some ground for caution. When the opening is small we should assure ourselves, by looking through the speculum, that it is not obstructed by the powder. The meatus should never be packed, and it is generally not advisable to give the powder to patients for personal use. However, in an experience of 7000 cases, I have never seen any untoward results from insufflation.

As the result of a fairly large experience, I have come to the following conclusions as to the best management of those complicating conditions which interfere with the cure of suppuration of the middle ear. Polypi do not in all cases require surgical removal, although this, when thoroughly done, is usually the speediest way of dealing with them. If they are not so located as to dam-up the pus, and are not coexistent with caries, they will sometimes disappear by shrinkage as the otorrhœa improves under routine treatment. More often, however, this is not the case. It has seemed to me that polypi, unless very large in size, are of importance principally as an indication of caries, rather than as mere pathological entities.

If a carious spot is detected in the wall of the meatus or in the middle ear, all granulation-tissue should be curetted away, and any loose spicula of bone removed with the forceps. If this procedure proves inefficient, the dissolution of the dead bone by means of hydrochloric acid, according to the suggestion of O. Bull,[2] may prove of service. He inserts pledgets of cotton saturated with a four per cent. solution of the acid, and leaves them in contact for twenty-four hours. This is to be repeated until the sequestrum can be detached.

[1] Deutsche med. Wochenschrift, No. 50, 1887.

[2] Archives of Otology, 1889, p. 123.

I have not had occasion, since the publication of Dr. Bull's paper, to remove any large spicula of bone, but for small carious spots which had interfered with the success of the ordinary treatment, I have employed the instillation of muriatic acid (5 per cent. of the acid, chemically pure, in water) with satisfactory results. I have left the fluid in the ear fifteen to thirty minutes according to the tolerance of the patient, repeating the application on successive days until I found the discharge diminished. Caries may be present, however, in such a position that the dead bone is inaccessible to the probe. An otorrhœa which persists under the usual form of treatment, and is not kept up by nasal or pharyngeal disease, always arouses a suspicion of caries. In such cases the use of hydrochloric acid will assure the probable diagnosis by means of its curative influence. Whether caries of the ossicles can be treated successfully in this manner I am not prepared to state, since I do not know how to recognize this condition, except by examination of the removed ossicles. When the carious ossicles are inaccessible, by reason of adhesions around them, as in suppuration of the attic with small perforation in Schrapnell's membrane, a cure of the otorrhœa can only be expected from surgical interference, which should not be attempted by any save an expert.

Finally, I wish to emphasize the fact that there are instances of suppuration of the middle ear which either do not heal at all, or else relapse very soon on account of naso-pharyngeal anomalies. There is either an obstructing lesion in the form of enlargement of the pharyngeal tonsil or thickening of the septum, or else a persistent suppurative rhinitis. Whether there is in these cases a constant reinfection of the Eustachian tube, or whether an injurious influence is exerted upon the nutrition of the middle ear, has not yet been determined. In these cases the successful treatment of the otorrhœa will depend upon cure of the nasal or pharyngeal disease.

65 Randolph Street.

PROPOSITIONS SUGGESTED BY THE FAILURE OF MERCURY AND POTASSIUM IODIDE TO CURE A CASE OF NERVE-SYPHILIS SUBSEQUENTLY CURED BY MERCURY ALONE.

Report of the Case.[1]

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I FEEL constrained to offer an apology for giving a single case the dignity of a special report. Although it has seemed to me one of distinct interest, I have refrained from publishing it until now, trusting

[1] Read before the Philadelphia Medical Coterie, February 24, 1891.

that. I might meet in current literature, if not in practice, a second case, or more, similar, and might thus be permitted to draw definite conclusions, where I can now only suggest indications, upon an obscure, though important, therapeutic point.

The features of interest presented by the case are these:

A man without discoverable preceding history of lues presented symptoms of disease of the nervous system suggesting a syphilitic origin. As far as could be ascertained by searching inquiry he had not been suspected of having had syphilis until he came under my observation, and had never received anti-luetic treatment of any kind. He was placed on full doses of potassium iodide in combination with the mercuric chloride for some time, absolutely without benefit. He was afterward rapidly cured by mercury alone. The following is the history:

H. M. B., male, aged forty three years, dentist. First seen November 15, 1888. For the past nine years has had occasional attacks of migraine, chiefly affecting the right side, with accompanying gastric disturbances; apart from this he has always been in fair health until the trouble for which he sought advice began.

About November, 1887, he first noticed that his gait was becoming a trifle clumsy, and that the legs had a tendency to stiffness and heaviness. This gradually increased until it became quite perceptible to others about April, 1888. His gait then began to be decidedly spastic; the legs were stiff, and easily wearied by walking short distances. On May 2, 1888, right-sided headache appeared, and soon became intense and continuous, with daily remissions and very decided nocturnal exacerbations. The ache, from the first, grew very severe on the approach of night, and continued so unbearably so that it absolutely prevented sleep. He stated that he had spent, for several months, most of his nights walking as best he could about the floor of his bed-chamber until sheer fatigue, or a very free use of anodynes, induced sleep. On examination the head pain was found to be strictly limited to the right side, and greatest in the temporal, inferior, and superior anterior parietal regions. The skin in these situations was hyperæsthetic. Deep, continuous pressure seemed to relieve the pain, while sharp percussion over the temporal region much aggravated it momentarily. There was also aching in the nucha, and muscular soreness relieved by pressure. With the onset of headache there had also appeared slight right-sided deafness, and soon after tinnitus.

His speech was a trifle thick, and there was decided tremor in the tongue, without noticeable paresis. The tongue presented ulcerations closely resembling mucous tubercles. His lower limbs exhibited the symptoms of spastic paraplegia. He walked with difficulty by the aid of two sticks; the legs were stiff and the soles of the feet dragged the floor as he progressed. The deep reflexes were exaggerated. The limbs had a tendency to jerk spasmodically at night, and the muscles to cramp. Spasticity and loss of power were greater on the right. Dorsal flexion of the toes and foot on both sides was incomplete. Coördination was unimpaired. He walked as well by night as by day, and with eyes closed as when open. Muscular sense was also carefully tested in other ways, and found unaffected. Tactile, pain, and temperature sense were tested a number of times in the extremities and trunk, and always found normal. There had never been any pains in the limbs, and no tenderness could be elicited by pressure on the nerve-trunks. No electrical examination was made, as at that time I had no portable batteries, and he was unable to come to my office. The pupils responded normally to light and accommodation. There were no ocular paralyses; eye-ground was found normal. The bowels were constipated. He had lost considerable flesh since the illness began.

I made a diagnosis of local cortical meningitis; spastic paraplegia, due to specific disease of the lateral columns; perhaps beginning bulbar paralysis. I looked upon the case as one of probable nerve-syphilis, but though the patient was seemingly very anxious to assist me in discovering the cause of his ailment, he absolutely denied any knowledge of specific infection, though I repeatedly questioned him. On stripping him during my first visit I found about the trunk a number of variable-sized, somewhat coppery-looking, cicatrices, that suggested the remains of a luetic eruption, the history of which, however, he informed me apparently in good faith, he could not recall.

He had been under the care of some seven or eight physicians since the head trouble began. Headache being by far the most trying symptom, he had preferred to be treated rather for it than for the paraplegia, trusting to obtain relief from the latter afterward. As he had had all prescriptions filled by the same druggist, I was readily able to obtain copies of them. Syphilis had evidently not been suspected. The treatment had been quinine alone, and in combination with morphia, bromides, bromides and morphia, gentian and sodium bicarbonate, and occasionally calomel and jalap to act on the bowel. Mercury (except as a purge) or the iodides had not been prescribed, and he assured me that at no time in his life had he been treated for syphilis. I placed him upon twenty-grain doses of potassium iodide in combination with one-twentieth of a grain of mercuric chloride three times daily, and at night at first full doses of potassium bromide alone, and later in combination with cannabis indica. In a few days the dose of potassium iodide was increased at first to thirty, then to fifty grains, and the mercuric chloride to one-fourteenth of a grain. There was absolutely no improvement on this treatment at the expiration of a month.

Bromides in very large doses had not influenced the distressing headache and insomnia. Hyoscine and morphia were also used ineffectually. It then occurred to me that as the patient in the past had, in all probability, never been subjected to a mercu-

rial course, it might be well to administer mercury alone, as it was not unlikely that the full doses of potassium iodide ingested were eliminating the mercuric iodide before it could exert any effect. I therefore placed him on one-third of a grain of the mercurous iodide in pill form, combined with a little opium and belladonna, four times daily, discontinuing the potassium iodide. The effect was quite astonishing. In three days there was noticeable improvement. Nocturnal headache, insomnia, and restlessness had distinctly lessened. From this time improvement was decided and continuous, and so rapid as to surprise me. In three weeks the headache had entirely disappeared. His tongue grew clean and normal in appearance. He became able to walk about without a cane, the spastic and paralytic condition having diminished materially. Two weeks later he was able to return to his vocation; he was eating and sleeping well, and had gained considerable flesh. He now drifted out of my hands, though he still continued the mercury. I hear from him occasionally. The amelioration in the spastic condition continued to a certain point and then ceased, as might be expected, anti-specific treatment having no power to replace lost tissue or to remove the secondary ordinary lesions. His gait is still noticeably paralytic, especially in the right leg, though he can readily get about without a cane.

So far as I know, the advisability of the conjoint administration of mercury and potassium iodide in lues has never been questioned. The majority of practitioners are, I believe, in the habit of so treating the late lesions of syphilis. And yet we know that the iodides of potassium and sodium, especially the former, are very active eliminants of mercury as of other metals. It is by some considered almost criminal to neglect to follow a prolonged mercurial course by potassium iodide to prevent the retention of the mercury in the system.

In this case I cannot but think that had mercuric iodide been administered alone, in the same doses in which it was prescribed in conjunction with the potassium iodide, an effect analogous to that produced by the mercurous iodide would have been obtained.[1] It may, therefore, I think, be justly inferred that the inefficiency of the combination was due to the fact that mercury, and not potassium iodide, was indicated in this case; why, it is difficult to explain. Althaus[2] states that he has found that mercury acts as a true specific in all primary luetic nerve lesions just as it does in all the earlier manifestations of the secondary period, and that it is infinitely superior to any other drug. He relates a case where epileptiform seizures were present, with intense headache, vertigo, insomnia, tinnitus, paralysis of the left leg, and specific ulceration of the tongue, in which, after a thorough trial of large doses of iodide of potassium, without benefit, recovery resulted from the use of mercury. He, therefore, regards potassium iodide secondary in usefulness to mercury. This opinion, however, is not general.

Gowers,[1] in reply to the question, whether there are late syphilitic lesions on which iodide has no influence and which yield to mercury, states that he has never met a case of intracranial syphilis in which there was reason to believe mercury was successful while the iodide failed. He, however, relates a case of luetic peri-adenitis of the neck, compressing the brachial plexus, and causing paralysis of the arm, in which full doses of potassium iodide, administered for a period of six weeks, exerted no effect, and which was subsequently removed by mercury. It has occurred to me that in those cases in which mercury, and not potassium iodide, is distinctly useful, a mercurial course in the past has never been instituted. It is well known that in many cases of nerve-syphilis, primary and secondary luetic symptoms have been so slight as to pass unnoticed by the patient, while the nervous symptoms are the first that distinctly appear. In these, of course, there has been no specific treatment. May it not be that in these cases the syphilitic virus still retains the contagious and transmissible qualities of its earlier stages, and is only capable of being brought into subjection by mercury.

In conclusion, a consideration of the foregoing suggests the following propositions:

1. Does not the fact that the success of mercury administered alone, immediately after the failure of full doses of a mercurial administered in combination with large doses of potassium iodide, indicate that potassium iodide probably eliminated the mercury too rapidly to exert any effect, and, therefore, that it is better not to give these drugs at the same time? or, if they are coincidently administered, should not the mercury be given in a somewhat larger dose than when it is prescribed alone?

2. That, in a case of disease of the nervous system the cause of which is suspected to be syphilis, though no history of specific infection is obtainable, it is unwise to exclude lues because no result accrues from a thorough course of potassium iodide.

3. In such a case, in all probability, no mercurial treatment, or, at least, no thorough course, has ever been tried. Will this fact, granting it, account for the failure of potassium iodide, and the subsequent success of a mercurial administered alone.

[1] When mercuric chloride and potassium iodide are combined mercuric iodide results.

[2] The Treatment of Syphilis of the Nervous System, London, 1890.

[1] Lettsomian Lectures on Syphilis and the Nervous System, 1889.

THE PEROXIDE OF HYDROGEN—ITS USES IN ABDOMINAL SURGERY.

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The importance of the peroxide of hydrogen as a germicide, and more especially as a pus-destroying agent, is becoming firmly established by rapidly accumulating clinical evidence. A very considerable experience with the drug has made me enthusiastic concerning its remarkable qualities; and I find myself extending its application almost daily. In general, in order that antiseptic or germicidal agents may be used effectively, it is absolutely essential that all foreign material, discharges, etc., be first removed, so that the agent may be brought in direct contact with the surface or tissue to be acted upon. It is also true that the power of penetration of the antiseptics in common use is slight, so that they are reliable only in combating strictly superficial septic processes. This is particularly true of corrosive sublimate solution, which, by its action on albuminous discharges, forms an inpenetrable covering which prevents the solution from coming in contact with the tissues to be acted upon. In this respect the action of the peroxide solution is essentially different. It attacks, disintegrates and oxidizes all discharges and dead tissue with which it comes in contact, thus favoring its contact with and action upon underlying tissues. Moreover, the products of its activity escape as water and carbonic acid gas. At this time I do not propose to discuss the relative value of the peroxide of hydrogen as a germicide. I believe that our knowledge upon that subject will be far more exact after a little time than it is at present. The fact, however, that this agent has the power to oxidize dead organic matter suggests to my mind a wide field of usefulness for it in preventing sapræmia or ptomaine poisoning, in the treatment of suppurating tracks and cavities in which dependent drainage cannot be had, and in which free irrigation with water is impracticable.

In my work in abdominal surgery I have found peroxide of hydrogen of positive value.

In cleaning the hands preparatory to operation I have found it very useful, especially when the skin about the finger-nails has become somewhat horny or roughened from too much use, or from frequent washings, or from prolonged contact with antiseptic solutions. Its power to loosen and to remove dead epithelial cells, and to soften the skin about the nails, is quite remarkable. Moreover, all foreign material about the nails is either oxidized and removed or is made more accessible to the sublimate solution which is used later. In practice I have used the peroxide after scrubbing my hands through three waters with soap and the nail-brush, then soaking them in turn in saturated solutions of permanganate of potassium and of oxalic acid, and before soaking them in corrosive sublimate solution.

Bacteriological examinations have shown that even this method (omitting the peroxide solution) does not make asepsis certain, as germs have been removed from the subunguial spaces after it has been faithfully carried out. I have not been able to test the value of the addition of the peroxide of hydrogen solution in securing asepsis by bacteriological experiments, but practically I feel convinced that it is of service in securing that end. The settlement of the question authoritatively will be of great interest to all those who believe in satisfying an antiseptic conscience.

In the management of the drainage-tube after abdominal section, under special conditions, the peroxide solution has been of signal service. In typical cases, in which the drainage-tube is removed after from one to three days, there is no indication for its use. But when from any cause the drainage-tube must remain in longer, it is useful in keeping the tube and drainage track sweet and free from pus. On a number of occasions after a tube had been in place from a week to ten days, and the discharge had become slightly purulent, I have been able to combat successfully the tendency to suppuration, to shorten the tube gradually, finally to substitute a gauze plug for the glass tube, and to secure rapid healing of the drainage track; when otherwise a sinus would have resulted. One such case was one of a ruptured large ovarian tumor, having contents of a jelly-like consistency, which had become distributed throughout the peritoneal cavity. Jelly-like material was discharged through the tube for two weeks, and yet by the use of the peroxide solution rapid healing was obtained. Another case was one of post-operative intra-peritoneal hæmorrhage. Tarry blood was discharged through the tube for ten days, yet the same care secured the same result. Another striking case was one of fæcal fistula which formed after the removal of a dermoid ovarian cyst—presumably caused by the growth of a small bunch of hair from the cyst into the bowel. The track was kept clean and the peroxide was used freely. The fæcal fistula closed in three weeks, and the remaining sinus closed within two months from the date of operation, being kept open for a time by an infected omental ligature, and closing promptly after its discharge.

The peroxide solution has been applied to the drainage track and to the inside of the tube by saturating absorbent cotton, held in a slender long-handled forceps, and passing this down the tube. The peroxide solution has been used pure or diluted (one to two or three).

I have not used the peroxide solution within the

peritoneal cavity during operation, but believe it will prove useful in disinfecting infected pedicles. In removing pus sacs rupture frequently occurs, deluging the broad ligaments with pus. Under these circumstances the ligature applied to secure the pedicle necessarily becomes infected. Heretofore I have washed away septic material with boiled water, and later applied bichloride solution on a sponge to the region of the ligature. In such cases it seems probable that the peroxide solution will be of real value.

In cleaning the abdominal wound preparatory to removing the sutures, the peroxide solution has proven very efficient; especially if a dry dressing—boric acid or iodoform—has been used. Finally, if any pus has formed in the track of the drainage tube or of any of the sutures, the peroxide solution will remove it more efficiently than any other agent.

TWO CASES OF TRAUMATIC HYSTERIA.[1]

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The study of injuries resulting from accidents is of peculiar interest, inasmuch as in them other important questions besides that of treatment are presented. Accidents are usually the result of negligence, and injuries caused by such accidents usually involve suits for damages, in which the physician or surgeon must state in court how seriously the patient is crippled by the accident, for enjoyment and usefulness in the world. This, in the present condition of expert evidence in this country, is an extremely unsatisfactory process. In the case of injuries to the bones and muscles this question concerns the surgeon alone, and can generally be definitely answered. When any portion of the nervous system is injured the answer is more difficult, and concerns not only the surgeon, but also the physician, and especially the neurologist. When the injury occasions, as it sometimes does, an organic disease of the nervous system, such as a cerebral tumor, a myelitis, or a neuritis, the diagnosis and prognosis of the case is not difficult, except that these diseases are often of very slow development and it may take months or years before the tumor attains sufficient size or the myelitis sufficient extent to give rise to definite and diagnostic symptoms. Therefore, in many of these cases the full extent of the injury done to the nervous system is not manifested until long after the question of damages has been settled. But besides these organic diseases it has been recognized for a long time, and is now being recognized more and more clearly, that not infrequently there result from accidents functional diseases of the nervous system which are very obscure, both in their symptoms and their pathology, and which depend in their etiology probably quite as much on the fright as on the physical injury.

These cases of functional nervous diseases are not apt to occur associated with severe injury of the bone and muscle. Probably because the long stay in bed which these latter injuries require and the concentration of the patient's attention upon these forms of injury are very favorable factors in the treatment of the functional neuroses and probably prevent their occurrence; although these neuroses do sometimes occur associated with severe injuries of the bone and muscle. Many of these cases of traumatic functional nervous diseases were described by Erichson under the name of spinal concussion, or railway spine, and were considered by him, as the name implies, to be due to a concussion of the spinal cord. But the more the symptoms of these cases were studied, the more difficult it became to regard them as due to any diseases of the spinal cord, and it became more and more clear that the symptoms were of cerebral origin, and the term spinal concussion, or railway spine, was replaced in turn by the terms railway brain, traumatic hysteria, traumatic neurasthenia, and traumatic neuroses. As these diseases are of a functional nature, their symptoms are such as can be simulated voluntarily or involuntarily; and as the temptation to voluntary simulation is great, on account of the damages claimed, the question of deception is to be considered a most important one. These cases have been the subject of many discussions in various neurological associations during the past few years, but on account of their wide interest I need no apology, I think, in calling the attention of this Society to two cases belonging to this class which present many of the points of interest common to all such cases:

Case I.—An unmarried dressmaker, aged nineteen years, was sitting in the last car of a railway train standing before the station and saw another train on the same track approaching rapidly from behind. Every one in the car shouted, "Jump for your lives!" and ran to the forward door. She got through the door, and, as the platform of her car was crowded, she stepped on the platform of the forward car and was about to jump to the ground when the two trains collided and she was thrown upon the track. A young woman who had stood beside her on the platform was thrown off and instantly killed. She was carried into the station and did not think she was much hurt, but soon became unconscious. When she regained consciousness and was helped on board the train she found that the right leg was numb and paralyzed. When she

[1] Read before the New York State Medical Society, February 3, 1891.

arrived home she presented a few slight bruises and complained of a numbness and weakness of the right leg and of pain in the lumbar region, which, during the ensuing weeks, grew steadily worse, and was associated with severe pain in the occiput. About a month after the railway accident she had an attack of convulsions, and again ten days later she had another similar attack. After she had been lying about twenty-four hours in this second attack, I saw her for the first time in consultation with her attending physician, Dr. Melick, of Fort Edward. She was then in a typical hysterical convulsion, her head being strongly retracted. Her movements were very violent, but though she threw herself from one side of the bed to the other, she did not throw herself out of it, nor did she hurt herself against the wall. In her convulsive movements all parts of the body moved. There were exaggerated knee-jerk and traces of ankle-clonus present in both legs. The pupils were equal and reacted to light. She was constantly shouting and raving that she was in a lunatic asylum and begged not to be sent upstairs among the noisy ones, whom she heard shrieking. She also saw knives and blood on the walls of her room. The attending physician stated that she did not feel pin-pricks in her right leg, but did in her right arm. Before examining her I stated in her presence that it seemed to me that the arm must be anæsthetic as well as the leg, as hemianæsthesia was usually present in such cases. She responded well to my suggestion, and when I examined her I found that the right arm and leg were absolutely insensible to pin-pricks, and the right side of the face very nearly so. Ovaries somewhat tender, but deep and continued pressure on them did not arrest the attack. Great tenderness over the spinous processes of the lumbar vertebræ, not over the others. Toward the end of my visit, as I made a feint of leaving to return to Albany, she ceased her convulsions and raving and talked rationally enough, complaining only of pain in the head.

After my visit the patient remained in about the same condition, making very slow progress toward recovery. She continued to have convulsions at irregular intervals and complained of numbness and heaviness of the right leg, which she seemed to be utterly unable to move. She showed marked tenderness of the spine. The right side of the face was very slightly anæsthetic, the right arm was slightly more anæsthetic, the right leg was completely anæsthetic. She was unable to walk or bear any weight on her right leg, principally because it caused such a severe pain in her back. There was no increase of the reflexes in the leg. She was unable to sit upright, but reclined during the day in an invalid's chair. The railway accident occured in November of 1888. In March, 1889, without litigation, the railroad company paid her $8500 damages, and after this the gradual improvement in her condition which had been taking place did not seem to be in the least accelerated. She remained a cripple, unable to use the right leg, and suffering from frequent attacks of hysterical convulsions during the next year.

Many times during this year she was urged to come to the hospital for treatment, but could not be persuaded to do so. Finally, after months of waiting, in April, 1890, she entered St. Peter's Hospital. At that time she complained of some headache in vertex and occiput and of paralysis of the right leg. She also complained of severe pain in the left ovarian region shooting around to the back. This pain was worse during and before menstruation. She was having from three to six attacks of convulsions each month, was well nourished, walked with the aid of crutches, and in so doing dragged the right leg. There was complete paralysis of all the muscles of the right leg, and complete anæsthesia and analgesia of that leg. Passive motion of the right leg was painless, but showed much muscular resistance, and the muscles could be felt firmly contracted, certainly with enough power to move the leg. There was no muscular atrophy nor fibrillary contraction. The movements of all the muscles except of the right leg were normal. Exaggerated knee-jerk and trace of ankle-clonus were present and equal in both legs. There was slight anæsthesia and analgesia of the right hand and arm, but not of the face, and there was ovarian tenderness on both sides, most marked on the left.

After entrance into the hospital the patient was given fifteen grains of quinine every night for the first three nights and a very strong faradic current was daily applied to the right leg. This strong current was scarcely at all painful, but caused active muscular contraction, and the patient was urged to increase the movements of her leg, which were occasioned by the muscles contracting under the application of the electricity. She was confidently assured that a rapid recovery would take place, and was encouraged in every way. Each day the leg moved more freely during the application of the electricity, and the patient found that directly after the electric current had been applied she could herself move the leg a little. Improvement having once commenced was rapid. At the end of five days she could walk better, the leg felt less numb, and the application of the faradic current, which was at first almost painless, had become extremely painful. Ten days after entrance into the hospital the patient walked with only a slight limp, and the right leg was only slightly analgesic; and in less than a month after entrance she was entirely well, and has remained so ever since, and has never had any return of the hysterical convulsions.

There are many things about this case which make it seem not impossible that the whole thing was assumed for the purpose of obtaining money from the railroad company. After the railway accident the patient did not seem to be particularly hurt, but went home, where she was surrounded by a sympathetic family and sympathetic friends, who undoubtedly suggested to her the possibility of obtaining damages from the railway company. After this had remained in her mind for a month or more, she began to develop symptoms of a severe nervous disorder, which symptoms might have been feigned.

She seemed to be unconscious, but in that state she was capable of receiving suggestions, as, for instance, that "the whole of one side of her body was anæsthetic instead of the leg alone," and acting upon this suggestion the whole side of her body became anæsthetic. Also, when I told her that I must go back to Albany and she would lose the benefit of my visit, she very promptly came out of her attack of unconsciousness and talked to me quite rationally. Then, too, the long-continued paralysis of motion and sensation in the leg was evidently a mental one purely, because under purely mental treatment—that is, isolation in a hospital and the application of the faradic current—this paralysis rapidly and entirely disappeared. And yet all these symptoms and conditions are what we frequently meet with in ordinary cases of hysteria, and it is no longer maintained that hysteria is assumed simply for the purpose of troubling relatives, friends, and doctors, but that it is a real disease, although exaggeration and involuntary simulation are prominent symptoms in it. If we had seen this patient without having obtained any history of a railway accident, we should have regarded her as simply a case of hysteria, such as often results from a sudden shock or long-continued worry or mental strain, and which recovered promptly under appropriate treatment.

We have, then, the alternative of regarding this case as one of functional disease of the nervous system dependent on fright, and either hysteria or very closely allied to it, or to regard it as a case of malingering pure and simple. With the first supposition the symptoms and course of the case correspond exactly, and it resembles cases of hysteria which are of frequent occurrence. Under the second supposition, however, the case is not so easily explained. The patient has not complained of some simple symptom like vague neuralgic pains, dizziness, general weakness, or loss of memory, in regard to the reality of which we must depend merely on her word; but she has simulated an actual and very complicated disease, and has simulated it accurately, which is no easy thing, even if she had abundant opportunity of studying such cases, which is not probable. Moreover, it seems altogether probable that if it were a case of malingering, she would have shown sudden, or at any rate more rapid, improvement, after having been given the large damages which she obtained. Undoubtedly in many cases of hysteria there is a decided element of exaggeration and deception, and both of these elements may have been present in this case; but the prospect of damages did not tend to diminish these factors. On the other hand, it certainly seems true that as the basis of this case there was really functional disease of the nervous system consequent upon the fright and shock of the accident, and that the diagnosis, traumatic hysteria, is justified.

Case II.—A woman, aged thirty-six years. On the 1st of October, 1885, while walking in the street her foot caught in a hole in the pavement, and, as she struggled hard to pull it free, it was suddenly released, and she was thrown some distance, her head and the left side of her body striking the ground violently, so straining and bruising herself that she had to be carried home. She did not lose consciousness, but during a month she remained in bed, vomiting everything that she swallowed and having pain in her head, throat, abdomen, and the left side of the body. The same symptons continued during the next month, but she got out of bed and then found that her left leg seemed shorter and weaker than the other, so that she could not lift it from the floor.

She entered the Albany Hospital March 7, 1887, stating that since the accident she had suffered from nausea, vomiting, pains in the head and in various parts of the body, and had had two attacks of general trembling. During the thirteen months previous to entrance she had taken nothing to eat but peptonized milk, except that on two occasions she had tried solid food with disastrous results. On entrance the patient was anæmic, the spine was tender, and there was some hyperæsthesia of the left side of the body and great tenderness in the left ovarian region. The left side of the pelvis was drawn up by muscular contraction, so as to cause an apparent shortening of the left leg. There was ankle-clonus and exaggerated patellar reflex in the left leg. She could walk only with a crutch and cane. The most urgent symptom in the case was the persistent vomiting, and to relieve this she was given a quarter of a grain of hydrochlorate of cocaine in a half-teaspoonful of water five minutes before eating. This method of treatment, which I have never known to fail in cases of simple irritable stomach, acted well in this case also, and the vomiting ceased and did not return. About two weeks after entrance, during which time she had taken three meals of solid food daily, she was etherized and the left leg was moved about violently in all directions. Before the etherization she was assured that under treatment and while under ether the leg would be restored to its proper length. Since that time the left leg has seemed to her to be as long as the other. Her back was cauterized several times. She remained in the hospital six weeks, her treatment consisting of frequent cauterization of the back, the application of electricity, and encouragement. When she left the hospital she could walk without cane or crutch and limped but very slightly. She ate well and had no nausea nor vomiting, although she still had some pain in her back and in different parts of her body. She herself said she felt like a different woman.

In July, 1890, she received, after long litigation, the sum of $6500, and on December 11, 1890, I saw the patient again. She walked freely about the house with a slight limp, but in the street carried a cane, because she frequently felt as if her legs were

collapsing under her, and as if she would fall if she did not sit down or have some support. She limps because her left leg feels awkward and seems short, as if the cords at the knee and ankle were contracted and drew the leg up. The shortness of the leg is entirely relieved when her back is cauterized; after which, during a few days, she does not limp. The cauterizations are made every two or three weeks, on account of attacks of vomiting associated with intense pain about the waist, and in all the upper part of her body, and with great hyperæsthesia of the skin—all of which symptoms are entirely relieved by the cauterization. She also has dizzy spells in which she sometimes falls to the ground, but in which she never loses consciousness.

In this second case the symptoms are in many respects quite different from those of the first case, and yet there can be no doubt that it is a clear case of hysteria, such as we are constantly meeting with in practice, and under appropriate treatment the hysterical symptoms almost completely disappeared. In this case the great improvement was obtained more than three years before the damages were awarded, instead of afterward, as in the first case. In both cases hospital treatment was necessary, and I doubt not that a stay in the hospital now of some months would make a complete cure in the second case as well as in the first. Just as in the first case, in this second case also the receiving of large damages did not favorably modify the disease, the patient being in the same condition now as she was for a year before the damages were received. In regard to the question of malingering, the same thing may be said concerning the second case as was said concerning the first, and the fact that the second case improved so much under hospital treatment several years before the damages were awarded to her, makes the question of simulation extremely improbable, because if the disease were simulated, the simulation would almost certainly continue until the damages were received.

In conclusion, I would say that in this short paper I have not attempted to exhaust the subject of the traumatic neuroses, but I have merely wished to present to the Society two cases of well-marked functional nervous disease belonging to such a clear type of disease as hysteria, which were the result of accidents. Similar cases have been reported by many observers, so that I think the occurrence of hysteria following and occasioned by accidents cannot be doubted.

If these cases of traumatic hysteria, as well as the other forms of traumatic neurosis, were, in their early stage, isolated from their family and friends and given special treatment in a hospital, there can be no doubt that they would recover much more rapidly, and would obtain a much smaller sum of damages from those responsible for the accident. Of course, these cases cannot be confined against their wills in a hospital; but if, when a suit for damages on account of traumatic functional nervous disease was commenced, the defendant were to make the offer to pay all expenses of the treatment in a hospital, in the hope of obtaining a rapid and complete cure, I think that in many cases the offer would be accepted, and in the other cases the fact that the offer had been made would put the defendant in a better light before the jury, for no expert could deny that had such a course of treatment been adopted the case would have stood a better chance of recovering. Finally, in estimating the amount of compensating damages it should be remembered that a considerable number of these cases are easily and rapidly cured under proper treatment, and especially so after the question of damages has been definitely settled.

HYPEREMESIS GRAVIDARUM.

BY STANLEY M. WARD, M.D.,
OF SCRANTON, PA.

THE paper on this subject by Professor Hirst, of the University of Pennsylvania, before a recent meeting of the Philadelphia Obstetrical Society, together with its discussion by some of the leading members (*Annals of Gynecology and Pediatry*, November, 1890), has constrained me to give my personal experience with two cases, and in connection therewith my views on the subject formed by that experience—somewhat brief, it is true—and the perusal of a great deal of the modern literature on obstetrics.

There seems to exist no doubt in the minds of obstetricians, that if the life of a pregnant female suffering from hyperemesis can be saved only by interrupting the course of pregnancy and sacrificing the life of the fœtus, such a course must be pursued; but there does evidently exist a grave doubt in the minds of many, and these, too, men whose honesty and capability none will gainsay, whether such a question need ever arise. There is such a wide difference of opinion, that should the practitioner consult authorities for a solution of the problem in a given case, the chances are that he would find himself much bewildered. He would find an author like Playfair teaching that "there is abundant evidence that every now and then women do die of uncontrollable vomiting, whose lives might have been saved had the pregnancy been brought to an end;" while, on the other hand, Braüne, whose experience is probably equalled by no other living obstetrician, states that he "has never observed a lethal issue in consequence of the uncontrollable vomiting of pregnancy," and speaks of abortion as only permissible from a "scientific point of view."

In discussing the paper before alluded to, Dr. J. Price also states that he never knew of a death from this disorder, though he had made inquiries, not only at home but in rural localities, of practitioners of large experience. Dr. Jaggard, in his article in the *System of Obstetrics*, edited by Hirst, goes a step further, and questions the diagnosis of "death from uncontrollable vomiting of pregnancy" in the absence of post-mortem proof. Indeed, were it my object to strengthen either side of the question, quotations could be easily multiplied.

It ill becomes anyone to dogmatize in this matter where so many able men differ; nevertheless, the outcome of the cases I have seen—the histories to be hereafter given—and what seems to me to be the *rationale* of the disease, force me to agree with Professor Hirst, who, in closing his remarks before the Obstetrical Society on the occasion referred to, said: "If a pregnant woman becomes the subject of a disease which has its origin in the condition of pregnancy, or which is much aggravated by the existence of pregnancy, and if by this disease the woman's life is placed in danger, then it is not only justifiable, but it is incumbent upon us to terminate the pregnancy, thus saving one life, and that by far the more important one, when, otherwise, two would be sacrificed." Physicians do not like to bring about premature evacuation of the uterus. Our profession is maligned and slandered in this respect altogether too freely. I do not believe any body of men is so often tempted, by money and influence combined, to commit an overt act, with so little yielding, as is the medical profession—and, though perhaps foreign to the subject, I wish to say emphatically, that I believe physicians often permit their patients to die rather than end a life only just begun. I do not defend this course; I believe it to be difficult to justify it, but that it is true no one with a knowledge of the facts will deny.

In the treatment of hyperemesis gravidarum it is only up to a certain time, in the majority of cases, when abortion is at all indicated, that the question of producing it ought to be considered. While a few instances are recorded of its having brought about cures almost miraculous, yet, as Playfair says, "when it has failed it seems to be on account of undue delay." Let not the practitioner, therefore, ease his mind altogether by the thought, that after failing to relieve the vomiting by the use of all the various drugs recommended, the local applications and mechanical procedures, he can still interrupt the pregnancy at will. The drugs are legion: cerium, ingluvin, cocaine, arsenic, opium, and so on through the list—"stomachics," "alteratives," "tonics," "sedatives,"—one and all have been used for the relief of the "vomiting of pregnancy," and besides these there remain ether spray, blisters to the spine, correction of uterine displacements, applications of nitrate of silver, electricity, and dilatation of the os uteri. A fair trial of all these measures, with many more which space forbids mentioning, would consume, I think, the whole nine months of utero-gestation; and while it is true that vomiting may cease spontaneously or as an effect of one or all of these agents, it is altogether likely—if the case has arrived at that pass when abortion as a means of relief was being seriously thought of—that Nature will empty the uterus during the death-throes of the patient, leaving the physician two deaths to ponder over instead of one. Without pretending to possess an infallible judgment or powers of discretion above the average, my deliberate opinion is that after a few days' use of oxalate of cerium, of Fowler's solution of arsenic alone or combined with the deodorized tincture of opium, morphine, with or without cocaine (hypodermically or not), restricted diet, pop-corn (a homely remedy, but one I have seen used with good effect), absolute rest in bed, rectal feeding, correction of uterine displacements, should such exist, with local applications—I say, after using each of these for a few days, and failing to relieve the patient, I would then dilate the os uteri, and this likewise failing, would stop treating symptoms and proceed to attack the disease at its headquarters, viz., in the uterus, and before a great febrile rise, before the brown tongue, the glazed and reddened buccal cavity, the anxious facies and delirium warn us of the rapid approach of the "grim monster," this must be emptied, or so treated that it will empty itself, always providing that one of our former procedures—dilatation—has not already brought about such a consummation.

Case I.—Mrs. E., a well-developed brunette, of excellent family, was married when about thirty-four years of age to a gentleman many years her senior. Four or five years before her marriage she suffered a severe shock by falling on her back against the back of a car-seat from the jolt caused by two trains colliding. She developed "railway spine," probably, and was invalided for some time, though for a year prior to her marriage and for some time afterward she was better than before, and able to walk and to travel to some extent. About a year after her marriage she had a miscarriage at two and a half months, the cause of which is unknown. She was then in Florida, and her physician there said she had cellulitis, and metritis thereafter. Nausea and vomiting were not pronounced symptoms. While at the seashore in August, 1887, she failed to menstruate; but that function not having been performed regularly for some little time, it was thought of no importance, and it was not until late in the month, when sickness at the stomach manifested itself, that she thought herself pregnant. A physician was consulted, who failed to relieve her, and she came home. On September 5th her family physician was consulted, who

diagnosed pregnancy, but who, from what I can learn, made no particular investigation of the case. For a month Mrs. E. was under his care, with no improvement. In fact she was confined to her room most of the time, and was becoming nervous and somewhat hysterical. Early in October the gentleman with whom I was then associated was called in consultation. His note at that time was: Patient somewhat thin, and vomiting almost continually, retaining nothing, apparently. Believes herself pregnant, and is in good spirits over the fact. All efforts to introduce the finger into the vagina are followed by so much pain and nervous excitement that I desisted for the nonce. A condition resembling vaginismus obtains. Ordered vaginal injections of hot water; glycerin also, as a lubricant. Bowels to be cleared out with an injection of soapsuds, and minute doses of calomel in milk-sugar to be dropped dry on the tongue every fifteen to twenty minutes for six doses.

October 4. Has had several movements of bowels. With much difficulty, and in spite of strong protests on the patient's part, a digital examination of the vagina and uterus was made. Great resistance of the vaginal walls; os tincæ hard; uterus not apparently enlarged, but hard, and firmly fixed by adhesions. Very little displacement. This examination, though conducted with the greatest care, annoyed the patient very much, and she became more excitable after it, and vomited with much exertion several times thereafter. The next day she was salivated, and there was also very marked gingivitis, whether due to the mercurial or not it is impossible to say. With this exception there was no change in her condition. No attempt to feed her in the usual way was hereafter made. Instead, nutrient enemata were used four times during the day and night. Vaginal suppositories of cocaine and belladonna were also employed. There being no improvement following this treatment, a few days afterward an attempt to dilate the os by the finger was made. This being found impossible, we endeavored to introduce a rubber bougie as far as the internal os; this likewise resulted in failure. Like all the other vaginal manipulations, these were followed by excitability and vomiting. A resort was now had to morphine, and a sixth of a grain was administered hypodermically twice daily with an apparent good effect. This respite, however, proved but temporary, and the patient again began losing ground.

13th. Another attempt was made at dilatation, which was likewise unsuccessful, and was followed by renewed vomiting and excitement. The patient protested loudly against further vaginal or uterine manipulation. She averred that the pain was most excruciating, and insisted that nothing should be done to interrupt the pregnancy. Some doubts were now expressed by her husband as to her condition, and the physicians began questioning themselves as to her real condition. Marked emaciation, fever, and mild delirium now became prominent symptoms, with the temperature partaking of the "typhoid type," as did likewise some others of her symptoms. The vaginal injections and suppositories, feeding *per rectum* every six hours, with the hypodermic use of morphine twice daily, together with small quantities of dry malted milk—which her stomach seemed to retain—were now the measures relied on, though little perceptible effect was obtained, and on the 16th a last attempt at dilatation was made; this was also unsuccessful. On the 19th and 20th it was thought there was a slight amelioration in her symptoms, though when the writer saw her on the 21st, in the absence of my associate, I saw little hope unless, under slight anæsthesia, say to the obstetrical degree, the uterus was forced to part with its contents. I was overruled, however, and nothing was done, save as above mentioned. Neuralgic pains came on during the night, with pain in the eyes, ears, and throughout the entire body. Delirium became more marked, and she sank rapidly, dying of exhaustion during the forenoon of October 23d. In adjusting the bedclothes a few minutes after death, a fœtus of nearly three months was found between the limbs of the patient.

I think comment is unnecessary. It seems to the writer that this case carries its own moral with it.

CASE II. Mrs. A., mother of one child born in 1884, failed to menstruate in May, 1888, from which fact she believed herself pregnant. She was a nervous, excitable woman, about thirty years of age. During her first pregnancy nausea and vomiting, though present, were not severe. She felt much chagrined and displeased at her present condition. During June she began to suffer from "morning sickness," and shortly became so bad that her physician was called. He treated her for a week with the usual remedies, but no relief being obtained, the patient retching and vomiting almost continually, recourse was had to morphine and cocaine hypodermically, and an examination *per vaginam* made. In this case, as in the former one, the vagina was small, and objections were made to the examination. Nothing of any value was learned. The os uteri was tightly closed. A peculiarity about this case was, that though the patient might be nauseated, and complaining most bitterly of her "sick" feeling, the introduction of the finger into the vagina was sufficient to stop all bad symptoms for the time. Acting on this discovery, vaginal injections were ordered, and twice daily glycerin tampons were introduced into the vagina well up against the cervix. This respite, however, lasted only a short time, and in a few days the patient utterly refused food, retched and vomited nearly all the time, became restless, slept but little; her tongue was becoming brown, and her breath offensive; she was slightly delirious at times, and there were evening exacerbations of fever.

Our therapeutic resources were about exhausted. It is not necessary to mention all the drugs used; local applications and counter-irritation had also been tried. In the condition in which this patient now was, with the result of Mrs. E.'s case before us, would we be justified in giving Nature a further chance, and in the meantime wait? This was the question that came to the minds of the attending physician and myself, as we talked over the case. We agreed that the worry and grief under which our

patient labored probably had a great deal to do with her condition, but a knowledge of this fact failed to assist us in our efforts to combat the symptoms. She herself had not even intimated that an interference with the pregnancy was what she desired. Her husband was very much distressed, and feared for her life. We agreed to wait twenty-four hours longer before deciding on further measures, and ordered the nourishment *per rectum* to be continued, and administered a sixth of a grain each of morphine and cocaine hypodermically. The vagina was also washed out and a suppository of cocaine and belladonna inserted. As long as she was under the effect of these drugs she rested quietly; but their effect was transient, and late that night we found her again vomiting, and rolling from one side of the bed to the other, groaning and moaning with the feeling of indescribable sickness. Her family were now most thoroughly alarmed, and urged that any means, by which her life might be saved, be adopted. More on account of our own fears for the patient's safety than in accordance with their demands, we introduced a bougie into the os uteri the next morning, and packed the vagina. She was kept gently under morphine all day. Her bad symptoms ceased almost entirely; but dilatation had proceeded too far for the safety of the fœtus, and a faint "show," with occasional pain, warned us to expect what soon happened; in forty-eight hours the uterus was empty. Mrs. A. had slight abdominal tenderness, accompanied with some rise in temperature for a few days thereafter, but these soon subsided, and her recovery was complete. Nearly a year afterward she became pregnant, and in due time gave birth to a healthy child. Early in this pregnancy her stomach threatened to make trouble again, but it was only for a short time, and her pregnancy pursued thereafter the usual course.

While any remarks on either case may appear entirely superfluous, I cannot forbear calling attention to a few facts connected with each. In Mrs. E.'s case it is probable that had it not been for unknown and uncertain factors, viz., the old spinal trouble and the "fixed" condition of the uterus, forcible dilatation under an anæsthetic would have been done. Whether dangerous pelvic diseases might not have been lighted up, had this been attempted, and the ultimate outcome been just what it was, is a question I am not able to answer. In the case of Mrs. A., while fully cognizant of the fact that the unwelcome pregnancy had much to do with her condition, yet our efforts had proven unavailing either to calm her mind or to check the vomiting, and it was felt that she was rapidly passing into a condition in which, perhaps, even the most radical measures would be of little use.

417 Adams Avenue, February 11, 1891.

A CASE OF RUPTURE OF THE SHEATH OF THE ADDUCTOR LONGUS MUSCLE.[1]

By JOHN B. HAMILTON, M.D., LL.D.,
of Washington, D. C.

A case of rupture of the sheath of the adductor longus muscle lately came under my observation, and, as the injury is an unusual one, I thought it worthy of record. I am indebted to Assistant Surgeon Geddings for the compilation of the clinical history:

Wm. L. Marshall was admitted into the surgical ward of Providence Hospital, Washington, D. C., February 7, 1891, suffering with a tumor upon the upper and inner aspect of his right thigh.

The patient, who had been an enlisted man in the United States Army, gave the following history: About two years ago, upon an alarm of fire being sounded, he ran down a steep flight of winding stairs and slipped and fell, with his leg and thigh in a position of extreme extension. He suffered considerable pain and was confined to bed for several days. Shortly after this he noticed the formation of a tumor upon the upper and inner aspect of his right thigh. The tumor, which increased in size, incapacitated him for duty, and he was discharged from the service by the Examining Board for physical disability.

The records of the Adjutant-General's office show the following:

"Private Wm. L. Marshall, Battery 'B,' First U. S. Artillery. Discharged at Fort Columbus, N. Y. H., August 12, 1890, because of disability produced by a tumor on the inner aspect of his right thigh."

Major J. R. Gibson, surgeon, U. S. A., reports the case as follows:

"An enlargement of the right femoral canal, ... which is complicated by a swelling or enlargement (muscular) on the inner aspect of the thigh."

On admission to the Providence Hospital, Washington, D. C., six months after his discharge, there was found upon the inner side of the right thigh, below Poupart's ligament and the sartorius muscle, a hard, non-fluctuating tumor, about the size of a hen's egg, and which varied in size, according to the patient's statement, being increased after exercise in the erect position and diminished after rest in the recumbent position. The tumor was movable and reducible, there was no gurgling upon taxis, and only a very indistinct impulse upon coughing. The patient being anxious for relief, and the diagnosis being somewhat obscure, an exploratory operation was determined upon. I operated Sunday, February 8th, in the presence of the hospital staff and class of the Georgetown Medical College. The integument was divided and the layers of tissue were incised upon a grooved director. Upon reaching the tumor it was found to have no connection with the abdominal cavity, but to consist of a portion of the adductor longus muscle, which had pro-

[1] Read before the Medical Society of the District of Columbia, March 18, 1891.

truded through a rupture in its fascia. The swelling was divided parallel with the muscular fibres. A rubber drainage-tube was introduced, the wound was closed by silkworm-gut sutures, and an antiseptic dressing was applied. The drainage-tube was removed in twenty-four hours; the wound healed by first intention, and the sutures were removed by the tenth day. The question of removal or excision of the tumor was not considered. A microscopical examination of a section of the tumor was made by Dr. Geddings, who found it to consist of striated muscular fibres. The patient made an uninterrupted recovery from the operation, the temperature at no time exceeding 38° C. It is now very noticeable that the tumor increases in bulk upon flexing the leg upon the thigh and the thigh upon the abdomen. Patient being anxious to resume his trade as a tailor, was discharged at his own request March 5, 1891, but was cautioned to avoid the use of the sewing-machine, and to keep constant elastic pressure applied to the tumor for some months.

I could easily have removed the projecting portion of the muscle, but I considered it better policy to allow it to remain, as the removal of the muscle might have resulted in permanent lameness; whereas he can now walk without limping, if his thigh is bandaged.

One naturally inquires what course should be adopted if such a case should fall under observation immediately after the accident. The answer is that the swelling should be cut down upon and the fascia united by sutures. The diagnosis may easily be made by observing the changes that take place during flexion and extension of the limb.

PERITYPHLITIS.[1]

By HUGO PHILLER, M.D.,
of Waukesha, Wis.

It seems strange that the description of the cæcum, the vermiform appendix, and the ileum, is, in certain respects, different in the several text-books on anatomy. All agree that the cæcum, or caput coli, is a blind pouch about three inches in diameter, two and a half inches in length, which forms the widest part of the intestine. It varies much, however, both in position as well as in shape. It is most frequently found, not in the iliac fossa, but on the psoas muscle itself, or in the pelvis.

According to Treves, who also denies the existence of a meso-cæcum, it is entirely surrounded by peritoneum from the ileo-cæal valve to its apex, and no areolar tissue is behind it, as described by the older anatomists.

Bardeleben[2] came to this conclusion as early as 1849, from an examination of one hundred bodies. Ransohoff, in a paper read before the Section on Surgery of the American Medical Association, May, 1888, found in sixty-three examinations (only twice in adults) that the cæcum was invested only in front and laterally by peritoneum, and he is convinced that perforations of the cæcum, or appendix, without involvement of the peritoneum, are "physical impossibilities."

Drs. E. W. Lee and J. B. Murphy, of Chicago, in an article entitled "Early Operations in Perityphlitis,"

"try to account for this discrepancy of opinion by different interpretation of these observers as to the manner in which the peritoneum is reflected around the vermiform appendix at its base; for while it appears to be within and completely encircled by peritoneum at its mesenteric attachment, about one-eighth of its entire circumference is not covered by that membrane."

The appendix vermiformis is a blind diverticulum of the cæcum, round, tapering and hollow, subject, however, to a great variation in size, shape, and situation, its general direction being upward and backward behind the cæcum. According to Fitz, the usual position is behind the ileum and its mesentery, with the tip pointing toward the spleen. Its walls contain but a small amount of muscular tissue, so that solid contents are not easily extruded into the cæcal cavity. It is for this reason very properly called "the death-trap of the intestines." In embryonic life the cæcum and appendix form one continuous pouch. Toward the fifth or sixth week the cæcum appears at the side of the rudimentary intestinal loop, in the form of a short and broad dilatation. While it grows in length, its width does not continue uniform, it being widest at the base, where it joins the colon. The differentiation between the upper third and lower two-thirds of the cæcum does not commence until the tenth week, and as it progresses the former rapidly widens, while the latter does not greatly increase in calibre. The appearance is thereby presented of a long, narrow tube hanging from and continuous with the apex of the projection from the intestinal loop. The cæcum and the appendix are thus formed. They are continuous with each other in the axis of the former, and, in the first half of embryonic life, are cylindrical like the small intestine. It is only at the sixth or seventh month that three ampullæ in the cæcum form the longitudinal muscular fibres in bands or tæniæ. They descend from the colon and meet at the apex of the cæcum—that is at the root of the appendix; one lies on the side of the bowel into which the ileum enters, a second is placed on the postero-external aspect of the colon and cæcum, while the third runs along the anterior aspect of the gut. By the equidistant disposition of these bands in the fœtal cæcum, it is divided into three parts. Uusually the part of the cæcum to the right of the anterior band grows quite out of proportion to that

[1] Read before the Brainard Medical Society.
[2] Virchow's Archives, Bd. 2, p. 584.

on the left, and the anterior wall of the cæcum becomes more developed than the posterior. As a result, the true apex of the cæcum is turned more and more to the left, until at last it is placed in close proximity to the ileo-cæcal junction, and can only be recognized by noting the point of origin of the appendix. The highly-developed part of the anterior band becomes so dependent and prominent that it forms a new or false apex to the cæcum, and it is to this projection that the anatomical term *apex* is usually applied.

Judging from the absence of the appendix vermiformis, which J. T. Whittaker[1] calls a relic or rudiment of a subsidiary stomach in lower forms of life, in the greater number of omnivorous animals except man, ourang-outang, and a species of rodent, the wombat, it seems physiologically to have no influence on digestion, except that it may act as a lubricator (like the tonsils), as it always contains a thick, glairy mucus. The normal appendix is, with very few exceptions, found completely surrounded by peritoneum and having generally a distinct mesentery, by which it is attached to the under layer of the mesentery of the ileum, and for this reason the peritoneum is necessarily involved in every perforation of the appendix.

The appendix varies in size, in the character of its walls, and in its contents. It may vary in length from one and a quarter to nine inches. In the museum of the Pennsylvania Hospital an appendix nine inches in length is described by Wistar. It lay behind the colon, reaching the under surface of the liver.

A long appendix generally takes an upward direction. Sometimes it lies on the psoas muscle with or without its tip in the pelvic cavity. It may stretch across the pelvis and become adherent to the sigmoid flexure of the colon, and has been seen in one instance, by Dr. J. H. Musser, of Philadelphia, in the inguinal canal, associated with a hernia. The character of its contents is also pathologically of importance. Various articles have been found in the appendix, such as fæcal masses or fæcal concretions, chiefly; but there have appeared, also, seeds of various kinds, buttons, bristles, worms, shot, pins, and gall-stones. Haeckel and Buhl even found concretions of meconium in the appendix of a newborn child.

There are certain anatomical points which favor the occurrence of local inflammation in this region:

1. The fixed position of the cæcum, restricting the amount of its peristaltic action.

2. Its deep transverse sacculi, affording great opportunity for the lodgment of hard fæcal matter or foreign bodies.

3. The arrangement of the ileo-cæcal valve preventing relief to the distended cæcum by crowding backward its contents.

4. The vertical direction of the ascending colon, along which the contents of the cæcum must be moved onward.

5. The existence of the vermiform appendix, so admirably adapted for catching and retaining small foreign bodies.

Morbid Anatomy.—On section of the abdominal walls there is found, especially in the right iliac region, an œdematous state of the tissues—either serous œdema or infiltration of pus due to the burrowing of the primary abscess. The peritoneum exhibits an intense degree of general or limited inflammation, and serum, pus, and sometimes blood, are found in the peritoneal cavity. In severe cases large flakes of lymph cover the intestines, the parietal peritoneum, and the abdominal organs; the intestines are more or less adherent to each other, according to the duration and degree of the inflammation.

The location of the abscess, usually circumscribed, depends upon the position of the cæcum; it is either in the right iliac fossa, just above Poupart's ligament, or behind the cæcum, or in the pelvis. Its size also varies, as it contains sometimes only two to three ounces, and in other instances more than a pint of pus. The appendix is found always in the abscess, and has generally undergone some changes. There is either inflammation and ulceration of the mucous membrane, serous infiltration of the walls, or perforation discovered. Such a perforation varies in size, sometimes surrounding the appendix entirely, sometimes only large enough to admit a probe. In the canal near the cæcum a foreign body is found in about sixty per cent. of the cases, but some authors think this percentage is too small.

The following conclusions must be drawn from the morbid anatomy:

1. Peri-cæcal inflammation is due to the inflammation, ulceration and rupture of the appendix vermiformis, with the secondary formation of an abscess.

2. The position of the abscess depends entirely upon the position of the appendix.

3. The larger number of cases of inflammation and ulceration are due to the presence of a foreign body occluding the canal—called by Ransohoff "retention inflammation."

4. There is no evidence of the existence of infiltration of the walls of the cæcum, other than that caused by a catarrhal infiltration or ulceration of its mucous membrane, the most common forms of ulcer being stercoral, typhoid, tubercular, and perhaps syphilitic.

5. The symptoms of a catarrhal infiltration of the

[1] Pepper's System of Medicine, vol. ii.

mucous membrane of the cæcum are those of a colitis rather than those of a typhlitis, and ulceration of the cæcum does not give rise to symptoms of typhlitis, unless the peritoneal covering becomes involved.

6. Very few cases terminate fatally, for resolution takes place, or the abscess either becomes encysted or ruptures into some neighboring organ.

Causes and Diagnosis.—While external violence, such as a fall, or blow, or the effort made in lifting a heavy weight, may be the exciting cause, the presence of a foreign body, however, or of a small mass of dried fæcal matter, is, in a great majority of cases, concerned in the production of perityphlitis.

Age and *sex* appear to have a causative relation. According to Fitz, who made a careful analysis of 257 cases, 80 per cent. occurred in males and 20 per cent. in females; 76 per cent. were under thirty years of age, and 50 per cent. under twenty years of age. Congenital or acquired irregularities in the position and attachment of the appendix may also influence attacks of inflammation. Ransohoff calls attention to another clinical feature or cause for perityphlitis, in the occurrence of marked symptoms of intestinal obstruction. This may occur from pressure by the thickened appendix upon the ileum from below and behind. Twelve cases have been collected by him, in which perforative appendicitis produced all the manifestations of internal strangulation.

The question as to the exact seat of the several lesions, which may be embodied under the name of perityphlitis, is still under discussion.

According to Israel T. Dana,[1] inflammation *in and about* the cæcum presents itself in three clinical varieties, viz.:

"1. The body of the cæcum is the primary and essential seat of the inflammation, the appendix being invaded, if at all, only secondarily, by simple extension of inflammation along the continuous mucous membrane (typhlitis). But this, I think, should be called more properly *cæcitis*.

"2. The vermiform appendix is the primary and essential seat, the body of the cæcum often escaping altogether (appendicitis or paratyphlitis).

"3. The inflammation early invades the post-cæcal tissues, and produces a burrowing abscess (perityphlitis)."

Dr. C. Eisenlohr takes exception to a division of the several lesions in the right iliac region generally characterized by inflammation and eventual perforation of the appendix. I quote his own words:

"We must admit that the appendix is the most frequent seat for these lesions, also that obstruction and necrosis are the most frequent causes. But even the nearest sequelæ of a partial necrosis of the appendix are not explained in all their phases, either on the post-mortem table or in the living subject. Notwithstanding the fact that the researches of French and American observers during the last few years have endeavored to distinguish appendicitis from other primary perityphlitic lesions (Bucquoy and Dantel), notwithstanding that Porter has shown the effects of a perforation of the appendix into its mesentery or outside of it, a precise differentiation of all these modifications cannot be made by clinical observations."

Dr. Graser, who has made extensive studies on this subject in the clinic of Professor Heineke, at Erlangen, claims that most of the processes formerly described under the titles of typhlitis, perityphlitis, and paratyphlitis, take their origin from the vermiform appendix. The process begins by ulceration about fæcal calculi, and results in the formation of pus, with perforation; the whole process is intraperitoneal, since the vermiform appendix is entirely surrounded by peritoneum.

Dr. R. H. Fitz, in an elaborate paper, makes the attempt to define clearly the anatomical relations of pathological conditions occurring in connection with the cæcum, which have heretofore been described under terms that fail to express accurately the origin of the lesion. Ulceration and perforation of the vermiform appendix have been found, in the vast majority of cases in post-mortem examinations, to have been the origin of the perityphlitic abscesses, the cæcum being intact. He, therefore, applies the term *appendicitis* to all these lesions, to express the primary conditions and to define their origin.

Dr. William Pepper,[1] in an article read before the Philadelphia County Medical Society, divides all cases of peri-cæcal inflammation into two distinct classes:

"1. Cases where the affection is limited to the walls of the cæcum and peri-cæcal connective-tissue, with a comparatively slight affection of the appendix. Those cases are marked by pain as the initial symptom, not excruciating in character nor associated with the evidences of collapse, but often accompanied with nausea and vomiting and elevation of temperature, which continues to rise until decided fever is present. The pulse also is considerably accelerated. There exists tenderness in the right iliac fossa, a sense of fulness and induration, with dorsal decubitus and flexed thigh, generally due to a considerable fæcal impaction in the cæcum. Those cases generally end in resolution and complete recovery by the proper treatment, to wit: absolute rest, abstinence from food and strict avoidance of interference with the state of the bowels, local depletion, counter-irritation followed by the application of the ice-bag or warm fomentations, the internal use of opium and mercury, and by watching closely the convalescence and insisting on the above restrictions until the over-sensibility of the part is entirely removed.

"2. Cases which commence with a catarrhal appendicitis. Here the patient may have been apparently in almost perfect health, perforation of the appendix taking place without any perceptible previous symptoms. The fæcal matter, which is present in nearly every healthy

[1] Reference Handbook of the Medical Sciences, vol. iv.

[1] Journal of the American Medical Association, December 14, 1887.

appendix, is no longer able to circulate and escape, because the outlet is partially closed by the swelling of the mucous membrane (partial stenosis); the pent-up secretions and the irritating fæcal matter excite serious inflammation in the walls of the appendix, ulceration is established, and perforation occurs. In such cases the first symptom is excruciating, intense pain, followed by the rapid development of the signs of peritonitis. The pulse becomes frequent, there is marked tenderness, not in the iliac region only, but also toward the middle line of the abdomen, sometimes extending into the genitals, especially into the right testicle and spermatic cord. The abdomen becomes distended, though evidence of dulness or induration may be present or absent. Vomiting is rare, and only induced when the stomach is taxed. For two or three days these may be the symptoms after the subsidence of the initial pain, and there may be only a moderate febrile reaction for several days, associated with continued moderate pain, simulating an ordinary catarrhal attack with intestinal colic. The bowels are quiet; not so constipated as in typhlitis, and with less impaction of the fæces in the cæcum. After a time there appear the symptoms of a rapidly-spreading, general peritonitis. The abdomen becomes greatly distended and tender, vomiting becomes frequent, the temperature rises, the pulse becomes thready and rapid, and death from exhaustion ends the scene in five to ten days."[1]

The most important question to be considered is, When is the earliest moment that we can establish the diagnosis between these two forms of cæcal inflammation?

The initial symptoms may give us some indication as to the seat and the gravity of the attack.

Typhlitis and perityphlitis soon offer demonstrable symptoms; but as the appendix is hidden under the intestine, the symptoms of perforative appendicitis are often obscure for several days. The most careful palpation may fail to show the slightest fulness. The patient may complain of pain over the cæcum, or over the hypogastrium, and external examination may not aid us in the diagnosis.

Pepper and Loomis speak highly of early and oft-repeated rectal examinations as the most important diagnostic means. I quote Pepper's own words:

"In such cases, if rectal digital examination should give a sense of distention of the right side of the pelvic roof, might not a puncture be made with a curved exploring-needle introduced through the rectum? In this way we might demonstrate the presence of pus, when it could not be possible to do so through the external abdominal wall."

Loomis holds, as a matter of theory, that by the careful examination of a patient, previously anæsthetized, with the index-finger of the right hand in the rectum and the left hand pressing into the right iliac fossa, evidence may be obtained to establish the diagnosis in the early stage, and so aid in determining the question of a laparotomy.

According to Joseph Ransohoff, the anatomical relations of the cæcum and the appendix alone suffice to explain certain clinical differences between inflammatory conditions of either part. The cæcum being comparatively superficial in position, and its peritoneal coat continuous with that of the iliac fossa and anterior abdominal wall, an abscess about it will speedily manifest itself by the presence of a tumor. The appendix, on the other hand, being deeply seated behind the cæcum and below the mesentery of the ileum, abscesses about it may continue for a considerable length of time without the appearance of a tumor in the right iliac fossa. The fixed position of the ileo-cæcal junction and the mesentery will often direct the progress of such an abscess toward the pelvis. Hence the great importance of rectal exploration as a diagnostic measure in cases of suspected inflammation of the appendix.

Treatment.—Fully concurring with the opinion of Dr. Murphy, that perityphlitis belongs, in the great majority of cases, to the province of surgery, I will not spend any time in recapitulating the so-called expectant, conservative plan of treatment, which consists of rest in bed, restriction of diet to nourishing liquids, hot poultices or fomentations frequently placed upon the parts, with local depletion, and hypodermic injections of morphia to control pain, to allay tenderness, to reduce abnormal peristalsis, to restrain hypersecretion, and to exercise an anti-inflammatory influence. According to Morton, the bowels should be kept open and free from accumulation of gas and fæces by the administration of salines and non-iritating enemata with the addition of some turpentine. I quote his own words:

"I would ask of those disposed to cavil at this advice, Shall we keep the bowels in liquid condition, and so prepared to best resist peritonitis, should it occur, whilst at the same time the mere draining of fluid from the intestines and surrounding parts would influence for the better the peri-cæcal inflammation? Or, shall we paralyze, and congest, and inflate the bowels by the old-fashioned 'splinting' treatment, and thus beckon on peritonitis?"

Wyeth,[1] while admitting the usefulness of laxatives in stercoral typhlitis and the early stages of typhlitis, warns us againt their use in the early stage of perityphlitis.

Thomas G. Morton,[2] in an article read before the Philadelphia County Medical Society, December 14, 1887, urges the division of the disease into a *pre-purulent* and a *post-purulent* stage. In the first, the conservative medical treatment above mentioned is resorted to; in the second, operative measures must be employed, and the perityphlitic abscess, or the post-purulent stage of perityphlitis, passes from the domain of internal medication into that of modern surgery.

The question then naturally arises, When shall we operate? Unfortunately, the acuteness or mildness

[1] Keating: Diseases of Children, vol. iii.

[2] Journal of the American Medical Association, January, 1888.

of the local or general symptoms is not an invariable index of the ultimate gravity of a given case. Sometimes fatal cases will set in with a very deceptive mildness of appearances; on the other hand, a very alarming beginning may be followed by resolution or a tractable state of affairs. According to A. G. Gerster, all therapeutic advice has only a conditional value, to be weighed and accepted or rejected by the sugeon in each separate case.

In view of the impossibility of foretelling whether, in a given case, spontaneous evacuation of the contents of an appendix or perforation will take place, and, in the latter case, whether a superficial or a deep-seated abscess will develop, and considering the fact that laparotomy followed by the excision of the appendix has yielded uniformly good results, if done before the access of perforation, it is safe to follow McBurney's advice, which consists in the performance of laparotomy and removal of the appendix, whenever severe symptoms persist and increase for more than forty-eight hours. The operation is indicated when an abscess has formed and threatening symptoms of collapse seem imminent, or when threatened perforation or intestinal obstruction appear. In most cases the operation is performed too late, or the patient is unnecessarily exposed to a long and exhausting illness. Sudden illness, with high fever, radiating pains, and increased resistance, are reliable signs for surgical interference. According to the time-honored maxim, "*Ubi pus, ibi incisio*," the lateral method, as first done by Professor Parker in 1843, is to be adopted under the strictest antiseptic measures.

When the abscess is found and opened, and the bulk of its contents has escaped, a gentle exploration by the index-finger is advisable to detect recesses or a foreign body. But all rough treatment of the walls of the cavity by scraping, tearing, or rude squeezing, is to be avoided, as it may lead to inward rupture. If the appendix is easily found, and appears necrotic or ulcerated, it should be removed. Two drainage-tubes are slipped into the cavity and fastened, for facilitating irrigation without causing undue distention. Daily change of dressings will be required for the first seven or ten days, until the discharge becomes serous and allows the removal of the tubes.

Dr. H. Kummel, of Hamburg, speaks of the treatment of a third form, the chronic relapsing form of perityphlitis. A patient who has once passed through a siege of perityphlitis is always in danger. The least error in diet, or a trauma, is likely to cause new trouble. Those which are most susceptible to relapses are the cases which do not result in the formation of abscess, but have an exudate around the appendix. The operation of removal of the appendix, as a lasting, radical cure, is to be performed after the acute symptoms have subsided, and the exudate around the appendix is resolved under the influence of ice and opium, the sheet-anchors of medicinal treatment.

The incision is made along Poupart's ligament or in the median line, the appendix being ligated close to the cæcum, and the stump closed with peritoneal suture. Only a few operations of this kind are published, so far, in literature; two have been reported by Senn, one by Treves, and two by Kümmel.

The three male subjects who fell victims to this disease in our community, a village of about 6000 inhabitants, during the past summer (May, July, September), were twenty-four, twenty-six, and thirty years old relatively, all robust and well-nourished workingmen. The disease came on in each case suddenly, and the patients and their respective relatives were rather reluctant in believing that the illness was grave and would need early surgical interference. All three consented rather late to be operated upon, after symptoms of peritonitis had fairly set in, and the cases ended in death, two dying from septic peritonitis four days after operation, the remaining one from shock six hours after operation. The appendix was found in each case perforated, and in a more or less necrotic state. The two cases which died from sepsis might have terminated in recovery, if the necessary antisepsis in all its details could have been carried out; but this is sometimes rather difficult in private practice.

Under such disadvantages, I, for my part, have concluded to remove, under all circumstances, as soon as I have established the diagnosis, any further case of perityphlitis to a well-regulated hospital for operation and treatment, and where the chances for recovery are above *par* on account of surgical cleanliness.

ORIGINAL LECTURES.

ICHTHYOSIS.

A Clinical Lecture,
delivered at St. Luke's Hospital.

BY I. N. DANFORTH, A.M., M.D.,
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GENTLEMEN: The first case I show you to-day illustrates a very rare variety of skin disease. I have only seen one other case like it. From the history-sheet we gather the following data: The child is twelve years of age, father living, and mother dead. Cause of mother's death unknown. She has two sisters living; one has some affection of the kidneys, the other is perfectly healthy. Two years ago last September the child had scarlet fever, from which she recovered, being sick about one month. A month or two ago she began to have epileptic seizures. In order to control the paroxysms the bromides were given. During the last two weeks

she has had only one seizure. It is not on account of epilepsy that I have brought her into the clinic, but because her case is a typical illustration of that rare form of skin disease which has been called by English writers "*ichthyosis*." It is a good case for you to study. It has been called by Wilson "*xeroderma*." The scales resemble those of a fish. The surface of the skin is dry, rough, and pearly in color. The cuticle exfoliates in fragments. The affection involves the extensor surfaces of the hands. On the flexor surfaces of the lower extremities it is quite well marked. Sometimes the skin is so peculiar in appearance that there is very little difficulty in making the diagnosis. The only mistake you are liable to make in regard to this affection is in winter time. When the skin is moist or weather cold, there is likely to appear an eczema of the skin, which we are told was present in this case when the patient was admitted into the hospital, but has disappeared under treatment. The general appearance of the lesion, however, extending, as it does, over the whole body, is enough to establish the diagnosis without any difficulty.

There are two varieties of this affection, viz., *ichthyosis diffusa*, and *ichthyosis follicularis*. These two varieties are subdivided by some English writers into *xeroderma follicularis*, *xeroderma diffusa*, *xeroderma pigmentosa*, and a half dozen others, which practically amount to nothing. There are only two varieties, and these are based upon the morbid anatomy of the disease. One variety is where the lesion begins upon, and is for a long time limited to, the surface of the skin. It does not involve the follicular structures of the skin. This is called *ichthyosis diffusa*, meaning a diffusion of the affection over the surface of the body, and this is a typical case of it. After a time it may affect the follicles of the skin. It develops usually during early infancy.

The other variety of the primary lesion is usually in the follicular appendages or hair follicles, and this variety is known as *ichthyosis follicularis*.

It is invariably a congenital affection. The child may be born with it, but if not, it develops within two to six months after birth. Hardly ever does it appear after that time. I do not think there is a case on record of the development of this disease after puberty, hence it may be regarded as congenital.

In ichthyosis the cuticle may be said to be more abundant than natural. There is an over-development of the epidermal layer.

The disease is invariably hereditary, being transmitted from parents to children. In this case, it is inherited directly through the mother, but *she* inherited it in turn from *her* mother. Another child, a sister of our patient, also has the disease.

Again, it prevails more extensively in certain regions, as, for example, South America. It is quite common in Patagonia, as well as in some of the islands of the South Pacific. Although the affection is said to be *endemic*, it is still *hereditary*, as seen in these cases.

As I have already told you, it almost always begins a month or two after birth. Sometimes the disease may remain latent for a year or two. It usually begins at the flexor surfaces of the joints, and the mother is very apt to pay little or no attention to it, supposing it to be some ordinary skin disease, such as chapping. The pearly scales fall off. The disease gradually spreads until it involves nearly the whole body. In some cases, however, only a certain area of the body is affected. It is always attended with dryness of the skin, for the reason that there is an arrest of development of the physiological power of the epidermal cells. The glands fail to secrete, so that the skin remains dry and apparently unnourished. When these lesions of the skin are once established, they are permanent.

This is the second case I have seen of the disease. The first case I saw was that of a lady, now forty years old. She has always been fairly well with the exception of this skin affection. I have known her for the past ten years, and she told me that she has never known her skin to be moist during the hottest weather. It always remains in that dry condition characteristic of the disease. The result is, that double work is thrown upon the kidneys. You are aware that there is a physiological relation between the skin and the kidneys. The skin is an adjunct to the kidneys. The skin in this case is entirely inactive, and it is not to be regarded in the light of a secretory gland. Ordinarily we look upon the skin as an active eliminating organ. Here the results are different.

In the case of the lady I speak of, the urine is constantly loaded with urinary salts or lithic acid. Five years ago she had an attack of neuralgia, hæmaturia, fever, extreme pain, etc., and was laid up in bed for two weeks. At the end of that time she passed a small calculus. These attacks have recurred every few months. She has pain, constant hæmaturia, and other symptoms indicative of calculus in the kidney. She is at present considering the advisability of an operation for the removal of the calculus. Life has become a burden to her.

This condition of things is largely due to the inactive and undeveloped condition of the skin. There is no possibility of restoring its functions.

If you take a section of the skin, and place it under the microscope, you will notice that the follicles are either undeveloped, or are dilated by the presence of a great number of dry, shrivelled, epithelial cells. In a word, these follicles are imperfectly developed.

The skin you notice in the patient before us is very dry and branny, and scales are constantly falling off. There seems to be a deficient development of the pigmentary layer, so that English writers recognize the pigmented variety where pigmentation is excessive. In the follicular variety the skin feels rough, like a nutmeg-grater; that is, the follicles become filled with a mass of dried cells which project like little horns above the surface of the skin. This peculiar appearance disappears as the rest of the skin becomes affected, but during the early stages the skin has a roughened appearance with a peculiar feel.

There are no subjective symptoms peculiar to the disease, so far as I am aware—no pain, no itching, except during very hot and oppressive weather. The lady, to whom I have referred, complains bitterly during hot weather. She cannot perspire. She gets no relief from the action of the perspiratory glands.

The history of cases like this is simply a continuation of the disease in one direction. It remains as it is. If neglected it gets worse, if treated it improves to the extent that there is some comfort afforded the patient. As

far as curing the disease is concerned, it cannot be done. We have, as yet, no therapeutic measures at our command which can restore the congenital defects of the skin.

The prognosis, so far as I know, is this: A patient is likely to live as long with ichthyosis as without it, provided no acute disease carries him away. But there is no question but what this affection increases the danger of pneumonia, rheumatism, fevers, bronchitis, etc., because we cannot thus have the benefit of the skin as an organ of elimination. You know that in patients affected with pneumonia, there is always more or less danger of nephritis, and in ichthyosis there would be the added danger due to the condition of the skin. If the skin does not act as an eliminating organ, a great deal of its work is thrown upon the kidneys, and there is constant danger of nephritis. Other than the dangers which naturally follow an arrest of development of the skin and the absence of its physiological functions, a patient is likely to live as long with this form of skin disease as without it. I do not know that it predisposes to lesions of any other organs of the body except the kidneys.

I will now say a few words with regard to the treatment. It is an incurable affection. There are no remedies which will cure a case of this kind, for the reason that we have no therapeutic measures which can develop an undeveloped organ. All we can do is to take care that other organs do not suffer or become involved.

I advise you, for one thing, to watch the condition of the kidneys. The urine of the patient should be examined every now and then, to see that the kidneys are not over-worked, for they are constantly in danger.

As to the skin, the first thing is to employ soap-and-water baths, or frictions with green soap, for removing the dead scales which are constantly accumulating. You can also keep the skin moist by the use of inunctions of some bland ointment. In my cases I have used inunctions of the oil of sweet almonds. It is a bland and mild oil, and odorless. It keeps the skin moist and supple and thereby adds to the patient's comfort.

If the skin becomes very dry it will sometimes crack about the joints, so that there will be longitudinal and transverse fissures. It is necessary to guard against this by the application of some simple inunction. Almond oil, lanolin, benzoated lard, or any other of the fat preparations which are bland and unirritating, may be employed with benefit. Vaseline is of little use. It remains a gummy mass upon the skin. Then, again, occasionally you might give the skin a bath with frictions of green or some other alkaline soap. The inunctions of ointment or oil should be as bland and unoffensive as you can make them.

A point of importance for you to remember is this: If a patient with ichthyosis has pneumonia, rheumatism, bronchitis, pleurisy, or any other acute affection, you must prognosticate accordingly. In a word, the prognosis would be more unfavorable than if the skin were in an entirely healthy condition, for reasons to which I have already alluded.

SYPHILITIC ECTHYMA.

Here is a case, gentlemen, which perplexed us a little in the matter of diagnosis. The patient was admitted into the hospital about three weeks ago as a gynecological case. At that time it was decided to have an operation performed on her, but before the operation was done she had a febrile attack, followed by an eruption on her face, mouth, body, arms, etc., which assumed very much the appearance of varioloid or chicken-pox. A physician from out of the city diagnosed the case as smallpox, so that it was for a time isolated. One or two days elapsed before I saw the case. It then had some of the characteristics of smallpox. It broke out in the form of pustules. Now and then these pustules had an umbilicated appearance, being depressed at the top. The case illustrated the fact that one who makes a diagnosis too rapidly might very easily mistake it for smallpox.

But what are the facts in the case? The patient had a vesiculo-pustular eruption with an elevated temperature, which would be hardly sufficient ground for making a diagnosis of smallpox. The girl stated that she had had smallpox or varioloid once. That statement may or may not be true; at all events, if it were true it would interfere somewhat with a diagnosis of smallpox.

In smallpox the temperature always runs higher, so far as I have been able to observe, than it did in this case. In smallpox there are rigors, headache, cough, soreness of the throat, marked bronchial irritation, and, more than all, there is pronounced lumbar pain, which, in many instances, is the first symptom of which patients speak. In all my experience with smallpox the first symptoms they complain of is an intense backache. I have seen cases repeatedly where an intense backache, not preceded by any eruption, has led me to suspect smallpox, and further investigation has proved it to be so. Pronounced backache, then, may be regarded as one of the diagnostic symptoms of smallpox. If a patient has an eruption, and that symptom is absent, you may be reasonably certain that it is not a case of smallpox with which you are dealing.

If you examine closely the pustules you will find that they are not typical of smallpox. In smallpox the pustules are nearly all alike, but in this case they differ in size, form, height, appearance, and termination, and they do not pursue the same course. The absence of backache and the atypical character of the eruption are against smallpox.

The subsequent history of the case led me to the conclusion that I had to deal with a specific eruption. I will not go into the details of that history at the present time. A diagnosis of syphilitic ecthyma was made. It is a rare case, and a typical illustration of the disease. It is an interesting case to study.

The treatment would be the same as for any other specific lesion.

HOSPITAL NOTES.

WOMAN'S HOSPITAL OF PHILADELPHIA.

SURGICAL CLINIC OF DR. JOHN B. ROBERTS.

Reported by MARY E. ALLEN, M.D.,
DEMONSTRATOR OF SURGERY.

Radical Operation for Scrotal Hernia at the Age of Four Months.—L. B., a boy of four months, was admitted to

the Woman's Hospital of Philadelphia December 19, 1889, on account of a very large congenital scrotal hernia, complicated with phimosis. The scrotum, when the hernia was forced down by crying, was about as large as a fist, and the penis was buried in the mass, looking like a sort of dimple on its surface. At other times the hernia was not quite so large, but was unusually bulky for so young a patient. The child's family history was good, both parents being living and healthy. The patient was also in good condition, with the exception of the trouble mentioned. Dr. Roberts stated that he was not inclined to attempt the radical cure of non-strangulated hernia as often as some surgeons, because he believed the slight risk of operation was unjustifiable in many of the troublesome hernial protrusions; and because the radical cure was often radical in name only. As there was every prospect that this enormous hernia would still further increase in size with age, it was decided to undertake an operation which, if it did not produce a radical cure, would at least diminish the size of the ring and permit subsequent treatment with a truss. The phimosis was to be operated on at the same time, as the straining in urination was evidently a cause tending to increase the hernia, if indeed it was not the original exciting cause of the intestine being forced down through the unsealed inguinal canal. The hernia was evidently of the congenital form—no true hernial sac, but the intestine lay in the tunica vaginalis testis.

On December 20th the patient was etherized for operation. He took the ether poorly, but without any bad effects. The incision for the herniotomy was made in an oblique line over the scrotum, the external abdominal ring and inguinal canal, and was nearly three inches in length. This was done while the tip of the forefinger of the operator's left hand was held in the external ring, having been placed there by invaginating the integument of the scrotum. This was done to prevent the reduced intestine from descending through the ring. The ring was half an inch in diameter—enormous in an infant of four months. After the hernia was thus reduced and retained by the finger, and the primary incision made, the canal was opened up to the internal ring. As there was no hernial sac proper here, the operator had nothing with which to plug the external ring and canal, and had to be content, therefore, with attempting occlusion of the passage, through which extrusion occurred, by simply suturing the walls of the canal and margins of the rings together. This was done as thoroughly as possible with sutures of catgut and silk, carried by means of a curved cervix needle. Obliteration of the ring and canal, so far as could be done without injury to the cord, was accomplished; and the hernia thus well retained within the abdomen. Some sutures were also applied to the upper part of the vaginal tunic of the testicle where it was continued upward as a patent canal, communicating with the peritoneal sac, in which the hernia had lain. The fascia and integument were sutured separately, and a few strands of catgut laid in the lower angle of the wound for drainage.

The phimosis was then operated upon by slitting the prepuce up on the dorsum and subsequently cutting away the redundant integument and mucous membrane, and suturing these two structures together with catgut around the circumference of the glans penis. Dry antiseptic dressings were then applied, both to the hernial wound and to the penis. The temperature after the operation was 101°, and remained elevated for the first three days. Two and a half grains of quinia sulphate in suppository, and five drops of sweet spirits of nitre were given every four hours to lower the temperature. This treatment was discontinued on the sixth day.

The dressings required frequent changing, because it was impossible to prevent access of urine to the region of the herniotomy, though vigorous attempts were made by covering the dressings with rubber tissue. Everything went well until the seventh day after operation, when the child began to show the first symptoms of influenza, which was then prevailing as an epidemic in the city. He had a slight diarrhœa and some coryza. On the eighth day, the temperature being still normal, the stitches were removed from the site of the hernial operation, when union was found to be good, and but a single drop of pus appeared, at the upper angle. Subsequently there was a further discharge, but it never occurred in any considerable quantity. The influenza, however, went on increasing, until by the tenth day severe bronchitis developed, and threatened the life of the child. The chest was rubbed with a liniment of yolk of egg, turpentine and vinegar; and 1 grain of chloride of ammonium, 5 drops of syrup of ipecac, 5 drops of sweet spirits of nitre, and 10 drops of syrup of senega were given every two hours as a cough mixture. The 2½ grain suppositories of quinia were also resumed, and a jacket poultice of wool placed upon the chest. By the eleventh day symptoms similar to those of meningitis developed, and added to the gravity of the case. The pupil of the right eye was markedly contracted and brows drawn; there was constant motion of the head and extreme restlessness, with a cry of pain. The temperature by this time was 104.4°. A warm bath was given, and cold water dashed on the breast to deepen the breathing, and cold was applied to the head. This was repeated several times during the day, and after the bath mustard was applied to the spine, behind the ears, and around the ankles. Two grains of bromide of potassium was given every two hours in anise water. The temperature was still high, 105.4°. The child continued very ill for nearly a week longer. One grain of iodide of potassium was added to 3 grains of bromide of potassium every two hours, and continued until improvement commenced. Later, 5 drops of syrupus ferri iodidi, three times a day, were administered, and the child rapidly convalesced. The hernial wound did well, and by January 9th, when the patient had recovered from the influenza, was entirely healed, retaining the bowel perfectly within the abdominal cavity. The wound made by the operation of circumcision did well also.

When the child was last seen, a week or ten days after leaving the hospital, the hernia was still undescended. Dr. Roberts advised that a spica bandage of the groin be continued until the firmness of the cicatrix was greater. He spoke of the probability of the hernia recurring, but believed that even in such a case the tumor would be small and manageable by a truss. The recovery of the child after such a severe attack of epidemic influenza, superadded to the operations was, in his opinion, principally due to the unremitting efforts of Dr. Fullerton, the physician in charge of the hospital.

MEDICAL PROGRESS.

Stricture of the Urethra.—J. WILLIAM WHITE reaches the following conclusions:

1. Strictures of large calibre, that is, of more than 15 French, situated at or behind the bulbo-membranous urethra, are to be treated, almost without exception, by gradual dilatation.

2. Strictures of large calibre occupying the pendulous urethra are to be treated by gradual dilatation when very recent and soft, and by internal urethrotomy when of longer standing, distinctly fibrous in character or non-dilatable. It is to be remembered that the great majority of so-called strictures of large calibre of the pendulous urethra are merely points of physiological narrowing.

3. Strictures of the meatus and of the neighborhood of the fossa navicularis should be divided upon the floor of the urethra whenever it is evident that they are real pathological conditions producing definite symptoms and not normal points of narrowing.

4. Strictures of small calibre (less than 15 French), situated in advance of the bulbo-membranous junction, unless seen very early and found to be unusually soft and dilatable, furnish the typical condition for internal urethrotomy, which should be done preferably with a dilating urethrotome and, invariably, with all possible antiseptic precautions.

5. Strictures of small calibre (less than 15 French), situated at, or deeper than, the bulbo-membranous junction, should be treated whenever possible by gradual dilatation. In a case of resilient, irritable or traumatic stricture in this region, or of stricture which, for any reason (as the occurrence of rigors), is non-dilatable, external perineal urethrotomy is the operation of choice.

6. Strictures of the deep urethra, permeable only to filiform bougies, should be treated by gradual dilatation when possible, the filiform being left *in situ* for some time, and followed by the introduction of others, or used as a guide for a tunneled catheter. If the stricture be not suitable for dilatation, external perineal urethrotomy should be performed.

7. Impassable strictures of the deep urethra always require the performance of perineal section.—*University Medical Magazine*, March, 1891.

Ointment for Acne.—*L'Union Médicale* states that ISAAC uses the following prescription in acne:

℞.—Resorcin		½ to 1 drachm.
Powdered oxide of zinc Powdered starch	}	of each 1 drachm.
Vaseline		2 drachms.

This is to be applied day and night to the affected part. If it is not desired to apply it during the daytime, it may be removed by the aid of olive oil and soap and followed by an inert absorbent powder.

Treatment of Alopecia.—MONIN recommends the following treatment of alopecia:

℞.—Gallic acid	45 grains.
Olive oil	6 drachms.
Vaseline	1½ ounces.
Essence of lavender	15 drops.

This is to be made into an ointment and applied with friction to the part affected morning and night for the arrest of the disease.—*L'Union Médicale.*

Treatment of Laryngitis.—MOURE recommends the following to be used in the treatment of laryngitis:

℞.—Crystallized carbolic acid	7–15 grains.
Hydrochlorate of cocaine	7 "
Opium	1½ ounces.
Distilled water	10 "

This may be applied by means of a brush three times a day, or

℞.—Boric acid	1 drachm.
Crystallized resorcin	½ "
Cherry-laurel water	1½ ounces.
Distilled water	10 "

This mixture may be used in an atomizer for from three to five minutes morning and night, or three or four times a day if the condition of the throat is subacutely affected.—*La Tribune Médicale.*

Treatment of Acne.—CAPOZI recommends in the treatment of acne the following solution:

℞.—Washed and precipitated sulphur Powdered glycerin Carbonate of potassium Cherry-laurel water Alcohol	}	of each 2½ drachms.

After thoroughly washing the part which is affected this mixture is to be applied at night, and may be replaced by an application of oxide-of-zinc ointment or glycerin.

Treatment of Diarrhœa by Salol.—MONCORVO has published an interesting paper concerning the use of salol in infantile diarrhœa. He considers it an exceedingly useful agent in the production of intestinal antisepsis in infants who are affected with enteritis or entero-colitis. The passages rapidly diminish in number under the influence of the drug and lose their disagreeable odor a few days after administration. The flatus which arises from intestinal fermentation is decreased by the action of the salol. He thinks that the drug may be used with advantage in infants of all ages, and that it is very rare for it to produce any untoward effects. The dose which he employed was from 2 to 30 grains in twenty-four hours, according to the age and gravity of the case.—*Revue Internationale de Bibliographie Médicale.*

The Treatment of Cardiac Asthma.—*The Journal de Médecine de Paris* gives the following treatment of FERRAND for cardiac asthma, which is divided into several parts. The general treatment consists in the administration of 2 teaspoonfuls of the following solution every morning:

.—Iodide of sodium	6 drachms.
Infusion of inula	10 ounces.

At night, after supper, two tablespoonfuls of a solution

of bromide of sodium and aconite are to be given, made as follows:

℞.—Bromide of sodium . . 6 drachms.
Tincture of aconite . . . 16 drops.
Infusion of hops . . . 8 ounces.

The treatment of an attack of asthma is to inspire steam arising from a vessel of hot water, and if possible containing the fumes of ammonium. 5 drops of the following mixture may be given every five or ten minutes:

℞.—Laudanum . . . . 1 drachm.
Cherry-laurel water . . 1½ drachms.

At the same time a subcutaneous injection of the following will be found of advantage:

℞.—Sulphate of atropine . . . $\frac{1}{10}$ grain.
Sulphate of morphine . . 3 grains.
Cherry-laurel water . . 2½ drachms.

Twenty minims of this may be injected at a time. After the attack has passed by, the following may be given:

℞.—Extract of stramonium, Valerianate of zinc } of each 1 grain.

Treatment of Coryza.—In the treatment of coryza Kola recommends that a teaspoonful of powdered camphor be added to a pitcher of boiling water, and that a cone of paper be placed over the mouth of the vessel, the other end of the cone being placed over the nose and mouth of the patient. The vapor which arises from the water is charged with the camphor, and may be inhaled for from five to ten minutes. Three inhalations are usually sufficient to arrest the most rebellious coryza. These inhalations provoke a most abundant secretion from the nasal and pharyngeal mucous membrane, and exert a favorable effect upon the inflamed parts.—*L'Union Médicale.*

Hæmoglobinuria from the Use of Quinine.—The *Revue Internationale de Bibliographie Médicale* states that Coromilais has recently observed six cases of hæmoglobinuria due to the ingestion of sulphate of quinine, thereby confirming the earlier observations of Beretas regarding the so-called hæmaturia produced by this drug.

Trichloracetic Acid as a Caustic.—This acid has been largely employed by Ehrmann in the treatment of maladies of the nose and throat. A crystal of the acid may be applied to the part affected, when it forms a white scab, which is rapidly detached. From an experience with 140 cases Ehrmann concludes that this acid occupies the first rank in the treatment of maladies of the nose and pharynx. It may be used with great advantage with an astringent, and the following formula is recommended by the writer:

℞.—Iodine . . . . . 4 drachms.
Iodide of potassium . . 5 "
Trichloracetic acid . . 4 to 8 "
Glycerin . . . . . 8 "

Apply to the part with a tampon.

One drop of this solution is not disagreeable, and it is followed by very little pain. In the treatment of follicular tonsillitis Ehrmann found it to produce a cure after three applications, and in two cases of ozæna the effects were very good indeed. Among fourteen cases of chronic pharyngitis there were eight cures and six notable ameliorations. A number of other instances are given in which equally good results were obtained —*L'Union Médicale.*

Pills for Dysentery.—The following pills used in the treatment of dysentery have given satisfactory results:

℞.—Powdered ipecac . . . 4 grains.
Calomel . . . . . 1½ "
Extract of opium . . . 1 grain.

Make into three pills, and give one each hour, in the treatment of diarrhœa or dysentery due to exposure to heat.

Treatment of Sciatica.—Jaccoud gives the following treatment for cases of sciatica. During the acute period severe counter-irritation or local depletion may be resorted to over the affected limb and hypodermic injections of morphine are to be given. If anæmia is present to any great degree severe vesication is not to be applied. If the disease is due to rheumatism it should be treated by the internal administration of salicylate of sodium given in the dose of from ½ to 1 drachm a day. Other cases may require large doses of quinine. Jaccoud prescribes the hydrobromate of quinine in the dose of 15 to 30 grains a day, and continues it until the symptoms of its physiological action become manifest. In this case the treatment is suspended for one or two days and then begun again. When sciatica passes into a chronic state in which it recurs, it is best to administer a mixture containing iodide and bromide of potassium in the dose of from ½ to 1 drachm each to be dissolved in a suitable vehicle, such as sarsaparilla. Externally resorcin may be resorted to and simple vapor baths or turpentine vapor baths may be used. The pain may be relieved by morphine.—*L'Union Médicale.*

The Treatment of Phthiriasis Pubis.—Fournier in *L'Union Médicale* gives the following applications for the treatment of this troublesome condition:

℞.—Distilled water . . . . 12 ounces.
Alcohol . . . . . 3 "
Corrosive sublimate . . . 15 grains.

Or,

℞.—Vinegar . . . . . 9 ounces.
Corrosive sublimate . . . 15 grains.

Add to double this quantity of water and apply as a lotion. Sometimes applications of oil with beta-naphthol may be employed.

Iodo-carvacrol, a New Antiseptic.—This preparation, which is isomeric with thymol, is formed from carvol, a derivative from caraway, dill and mentha crispa. Just as thymol, treated with iodine and iodide of potassium in the presence of an alkali yields aristol, so carvacrol similarly treated forms a yellow-brown precipitate which can be reduced to the form of a powder. This is called iodo-carvacrol and is available for the same therapeutic purposes as aristol.

Antiseptic Application for Diphtheria. — LE GENDRE recommends the employment of

℞.—Borate of sodium Chlorate of potassium	of each	1 drachm.
Carbolic acid		3 grains.
Glycerin		2½ drachms.
White honey		1 ounce.

The mixture is to be applied to the portion of the throat which is involved in the disease by means of a camel's-hair brush.—*La Tribune Médicale*, February 5, 1891.

Abortive Treatment of Herpes.—In those persons in whom herpes occurs periodically and produces much pain and discomfort LELOIR recommends the employment of resorcin, thymol, or menthol in one of the following solutions:

℞.—Resorcin	30 grains.
Alcohol	3 ounces.

Or,

℞.—Menthol	30 grains.
Alcohol	4 ounces.

If the pain following this application is very severe, the following formula may be employed in place of the other two:

℞.—Hydrochlorate of cocaine	15 grains.
Extract of cannabis indica	2½ drachms.
Essence of peppermint	2½ "
Alcohol	4 ounces.

It is also well to cover the sore spot with some impermeable dressing, in order to protect it from the air.—*Gazette Hôpitaux de Paris*, December 18, 1890.

Treatment of the Vomiting of Pregnancy.—The *Deutsche medicinische Wochenschrift* recommends the following treatment for vomiting of pregnancy:

℞.—Creasote	10 drops.
Acetic acid	20 "
Sulphate of morphine	1 grain.
Distilled water	1 ounce.

A small teaspoonful every half-hour until four doses have been taken.

Treatment of Effusion in the Knee-joint.—In the London *Practitioner* for February, 1891, OWEN describes his treatment for effusion into the knee-joint. He says:

In some instances the aspirator was employed, but in others the distended joint was dealt with by a hydrocele canula of about the gauge of a No. 1 English catheter. In the use of either instrument the surgeon must take care that it is aseptic, and that the skin through which it is to be introduced is not only "cleansed" but clean. Moreover, he must not operate with "unwashen hands." Another point to be attended to when using the canula is that just as the fluid is ceasing to flow the surgeon should block the end of the instrument with his finger, and so withdraw it that he does not introduce air into the joint.

A canula thus used is as safe as an aspirator, and it has this recommendation, that it is sure to be in working order. If an ordinary canula and trocar cannot be used with security, peritoneal cavities, ovarian cysts, and vaginal tunics should have been in the habit of suppurating. This we know is not the case. It is very much the fashion now, however, to drop the simple word "tapping," or its equivalent "paracentesis," and, with a homage to euphemism, to employ the term "aspiration."

To the practitioner it matters not whether the fluid is blood or sero-synovia. He has merely to obey the indication. If the joint has begun to swell up directly after the injury, the distending fluid must be blood; but if a day or more have intervened between the hurt and the swelling, the fluid has been poured out by the inflamed synovial membrane. Such fluid is a mixture of synovia with serum; often it is stained with blood.

Dr. Owen has never known any trouble to follow the tapping of a joint; he adopts it as a routine treatment in the case of fracture of the patella as well as in the more simple variety of distention.

As a rule, the puncture is made to one side of the patella. When withdrawing the canula the track is obliterated by firm pressure with the finger. The skin puncture is covered with a scrap of lint dipped in collodion, or by a little pad of dry wool. The knee, together with the upper half of the leg and the lower half of the thigh, is then enclosed in lateral splints of house-flannel and plaster-of-Paris. The limb is fixed in the extended position, the foot being slightly raised. The firm pressure which is made around the joint is comforting, and it effectually prevents further effusion into the synovial membrane.

Having watched the effect of this method of treatment, Dr. Owen can honestly say that, should he have the bad luck to be the subject of acute traumatic hæmarthrosis or sero-synovial effusion of the knee, he would most certainly have the joint treated in the manner described. And he should ask that the site of puncture might be first numbed by the application of a piece of ice and some salt.

Treatment for Gonorrhœa —

℞.—Opium	7 grains.
Acacia	7 "
Saffron	15 "
Boiling water	5 ounces.

Make an infusion, filter, and add

℞.—Acetate of lead	20 grains.
Sulphate of zinc	45 "

Use as an infusion in the later stages of gonorrhœa. In place of this the following may be employed:

℞.—Pyridine	6 to 8 drops.
Distilled water	2½ ounces.

Use three to four injections of this a day.

Treatment of Seborrhœic Eczema.—DUBREUILH states that this affection, which is difficult of treatment, will yield to the following application, if made twice a day:

℞.—Oxide of zinc	2 drachms.
Washed sulphur	1 drachm.
Salicylic acid	15 grains.
Vaseline	1 ounce.

Current Literature.

SATURDAY, APRIL 11, 1891.

SYRINGO-MYELIA.

Charcot and Brissaud (*Le Progrès Médical*, January 24, 1891) report a case of peculiar interest. The patient fifteen years ago, at that time twenty-five years of age, visited Professor Charcot for a nervous affection giving rise to an incoördination in the gait and a feebleness of the entire left side of the body. There was an incoherence in his movements, together with great increase in the patellar reflex, and associated with these were painful cramps in the lumbar region, extending across the abdomen in the direction of the psoas muscle and down the inner face of the thigh and the anterior surface of the leg. The action of the adductors of the thigh and extensors of the foot was so exaggerated that the patient walked upon the external border of the foot. The limb was absolutely rigid and his gait resembled an infantile hemiplegia complicated with a certain degree of athetosis. The patient came of a family whose male members were in robust health, and from this fact, together with the symptoms he presented, it was evident that his disease had nothing in common with tabes. Charcot decided that he had a spasmodic spinal affection, the origin of which he could not determine, but that the affection was certainly not tabes. Hydro-therapeutic treatment was instituted and followed with some regularity for six months. Then the patient, who was an officer in the army, rejoined his regiment, and Charcot lost sight of him.

Fifteen years later, in September, 1890, the same man again consulted the Professor. To the spasmodic hemiplegia, which had formerly been his whole complaint, were now added various nervous manifestations which formed a very complex condition. The contracture due to the spasmodic condition was very pronounced in the arm and leg, but more so in the leg. While walking the forearm was semi-flexed, the leg stiff, moving as one piece, and oscillating from side to side, and the foot rested upon the external border rather than upon the sole. The toes were elevated, the plantar surface facing internally. There existed a slight lumbar scoliosis, with the concavity turned to the left. The patellar and olecranon reflexes were greatly exaggerated. The spinal epilepsy once provoked, persisted indefinitely. The plantar reflexes were also exaggerated. The movements of the left arm and shoulder were very limited, the member, with the exception of the hand, being almost completely impotent. The entire right side was normal. Upon neither side did a muscular atrophy, properly speaking, exist, but the muscles of the left side were not so well developed as were the right. There were no fibrillar tremblings. The cutaneous sensibility was intact upon both sides, while the thermic sensibility, both for heat and cold, was almost totally abolished *upon the entire left half of the body, including the face, the tongue, and the pharynx.* The patient was unable to perceive very high or very low temperatures. The sensorial sensibilities were intact. The analgesia and thermo-anæsthesia dated from 1882, and only had therefore eight years of existence. The left hand in its entirety was much more voluminous than the right—it was large, thick, and flat, without having increased in length. The fingers were voluminous and bloated; the skin rugous; the folds of the palmar surface deepened. The whole appearance of the hand approached the type of acromegalia. The metacarpo-phalangeal and phalangeal articulations were sensibly hypertrophied, the fingers not being uniformly cylindrical. These multiple unilateral arthropathies, limited to the left hand, were of trophic origin. Such was the condition of the patient at the time of his second visit in 1890.

The significance of this case is very important. It would appear from this history that syringo-myelia may, during a long period of years, present itself under the form of a *pure and simple spasmodic hemiplegia*. Such a condition has not, as yet, to the author's knowledge, been noted.

THE RECENT RESEARCHES IN DIPHTHERIA.

Among infectious diseases diphtheria is the one which during the last two years has been most thoroughly investigated. The specific cause of the disease has been discovered, its biological properties studied, the poison isolated, and its mode of action determined. Klebs, in 1883, was the first to note the existence of a specific bacillus in the diphtheritic false membrane and upon the surface of the subjacent mucous membrane; but it was not until 1884 that Löffler studied the bacillus and its actions most completely. He, however, did not pronounce himself in favor of the specificity of the bacillus, for three reasons: the absence of paralysis after positive inoculations, the presence of a similar bacillus in the mouth of a healthy child, and the absence of the specific bacillus in several typical cases of diphtheria. Such was the state of the question when it was taken up by Roux and Yersin (1888 to 1890), who have definitely demonstrated the specificity of the Klebs-Löffler bacillus. As to the existence of the pseudo-diphtheritic bacillus, these investigators pronounce in favor of an affinity between the two bacilli, one of which becomes virulent only under certain conditions. The reasons upon which they base their belief are the following: The pseudo-diphtheritic bacillus exists in the mouths of healthy individuals and of those who have non-diphtheritic angina. But this non-virulent bacillus, which is very rare in fatal diphtheria, is most abundant in benign diphtheria, becoming more common in proportion as severe diphtheria approaches a cure, and in the latter case is more numerous than in the mouth of a healthy person. These facts show, then, that there is a direct relation between the two bacilli, of which the one does not exist in the attenuated form of the other. This hypothesis appears much more probable, since the cultures of the pseudo-diphtheritic bacillus possess certain pathogenic properties, and provoke œdema more or less considerable, according to the nature of the animal.

The bacillus of Klebs is ordinarily found upon the free surface of the false membrane; but in some cases the most superficial layer of the membrane is covered by divers microbes, rods, micrococci, and chains, mixed with masses of the Klebs bacillus, which are, on the contrary, predominant immediately below. These bacilli are colored blue by methyl, rapidly coagulate serum at a temperature of 33° C., and more slowly nutritive gelatin, where they take a characteristic appearance. The bacillus is nearly the length of the bacillus tuberculosis, but thicker, its extremities are rounded and take the blue color more vividly than the central portion. It is immobile and exists in great numbers. After some days of culture the medium, formerly alkaline, becomes acid; this acidity persists for a long time, and is then replaced by an alkaline reaction. It preserves its vitality during a long time, and at the end of five months can be revived if kept at a temperature of 33° C. Dried and kept at this temperature it succumbs at the end of three or four months. The false membrane preserves its virulence after five months of desiccation; exposed to the sun and rain the membrane becomes sterile in one or two months. These facts are very important from a practical point of view, and explain certain cases of apparently spontaneous diphtheria.

The bacillus of Klebs, or the diphtheritic virus, when placed in contact with healthy mucous membrane does not provoke diphtheria; but a single lesion, a slight erosion, is sufficient for the infection to take place. The morbidity and the mortality also of diphtheria rise rapidly during the cold seasons. The mortality is particularly high in countries exposed to abrupt changes in temperature. As to the action of the diphtheritic bacillus in producing the disease, Klebs, Löffler, Roux, and Yersin, as well as others, have remarked that the bacillus does not invade the organs, is never found in the blood of patients or of inoculated animals, and remains confined to the primary false membrane. It is not, therefore, the bacillus itself which gives rise to the grave accidents which characterize diphtheria and its poisoning. It is evident that the morbid symptoms are produced by a poison secreted at the point of infection by the bacillus, which, taken up by the general circulation, may be carried into the tissues of the organism. This idea, started by Löffler, who considered the poison as a diastase or enzyme, was also expressed by Roux and Yersin. They pronounce in favor of the poison being a diastase, and have secured it nearly in a state of purity by means of the dialyzer. The researches of Babès in 1890 have confirmed all that Roux and Yersin have advanced. Carried by the cells and the liquids of the organism, the poison forms in the depth of the mucous and sub-mucous tissues similar nests to those upon the surface, and gives rise in this way to the various phenomena of the disease.

By daily microscopical examination of the false membrane it is possible to note the progress of any case of diphtheria toward a cure, as shown by a decrease in the number of the Klebs bacilli present. As regards treatment, cauterization of the membrane with a strong solution of phenol, washes for the mouth, and gargles, will avail most in arresting the infection of the organism.—ROMME, in *La Tribune Médicale*, January 29, 1891.

DISSOCIATION OF THERMIC SENSIBILITY IN SYRINGO-MYELIA.

IN *La Médecine Moderne*, February 5th, DEJERINE and THUILANT report a case of syringo-myelia occurring in a man thirty-four years of age, who presented a spasmodic paraplegia and atrophy of the muscles of the left hand and forearm, associated with fugitive pains in the lower limbs. There was a hyperostosis of the left olecranon, with diminution in the faradic and galvanic contractility of the muscles of the arm, without the reaction of degeneration. There was absolute integrity of the tactile sensibility of the entire cutaneous surface, as well as of the sensation of pain. There was complete sensibility for all temperatures below 20° C. upon the entire surface of the body, but by the skin of the upper extremities and of the trunk high temperatures could not be detected. Severe burns could be inflicted upon these portions of the body without the patient having any knowledge of the injury. In the other portions of the body the sensibility to heat was preserved. The insensibility to heat in the upper portion of the body acquired its maximum intensity in the hands, especially upon the palmar surfaces, in the forearms, and in the lower half of the arm.

The patient dying, soon after admission to the ward of the hospital, from an advanced tuberculosis of the lungs, an autopsy was performed thirty hours after death. An extreme flattening of the spinal cord was noted, extending from the first cervical portion to the level of the lumbar enlargement, the cord resembling a flattened ribbon. A cavity of large dimensions extended the entire length of the cord to the lumbar enlargement, where it diminished, and at this level small gliomata jutted out into the centre of the cord. There was a slight neuritis of the cutaneous nerves of the forearm, and intense neuritis of the muscular nerves corresponding to the atrophied muscles.

This case is of special interest clinically, from the proof which it gives of the possibility of encountering in the course of syringo-myelia a separation in the thermic sensibility, the sensibility to cold being preserved, while that to heat or high temperature is lost. It will be interesting to seek in the future, in analogous cases, for the opposite condition, the loss of the sense of cold, with the preservation of the power to distinguish high temperatures. From a physiological point of view the case reported sustains the opinion of those authors who admit the existence in the spinal cord of special conducting fibres for heat and for cold.

CORRESPONDENCE.

OLIVE OIL, OR COTTON-SEED OIL, IN GALL-STONE COLIC.

To the Editor of THE MEDICAL NEWS,

SIR: Having given the subject of the use of olive oil in the treatment of gall-stones some thought, I have

been especially interested in your editorial in the issue of March 14th. You express some surprise that Dr. Stewart's theory did not receive mention in the recent discussion by the North Carolina Medical Society. In my "Report on Practice of Medicine" submitted to the last annual meeting of the Virginia State Medical Society, published in the volume of *Transactions* for 1890, you will find the following reference and criticism:

"Dr. David D. Stewart, of Jefferson Medical College, thus explains the action of olive oil or cotton-seed oil in gall-stone colic: The pancreatic juice, by means of the fat-splitting ferment, steapsin, decomposes the oil in the duodenum into fatty acids and glycerin. The glycerin acts on the duodenum in the same way in which it affects the rectum when used by enema, withdrawing water, and causing hyperæmia and irritation of the afferent nerves of the part with which it comes in contact, thus leading to powerful reflex peristalsis. This irritation would also cause reflex contraction of the gall-bladder, cystic and common bile-ducts, thus promoting the expulsion of stones sufficiently small. The diffusibility of glycerin would also enable it to enter the gall-bladder and ducts leading therefrom, and produce similar depletion of the vessels there, locally, and reflexly promote contraction of muscular fibres. A copious outflow of diluted bile would also promote the dislodgment of stones. No satisfactory explanation has heretofore been offered as to the efficiency of the oil; and as it seems probable that glycerin can produce the effect now under consideration, it is likely that it is caused by it. If this can be proven, yet the oil would have to be given, as the hygroscopic properties of glycerin would cause its dilution if given by the mouth, so that it would be too weak by the time it reached the duodenum.

"To prevent the nausea and difficulty in retaining the oil, he uses, half an hour beforehand, the following:

℞.—Cocaine. . . . . ⅓ grain.
Comp. tr. cardamoms
Spts. chloroform } of each 10 minims.

"There are several objections to this theory. It seems to take too much for granted. The physiological explanation may be all right so far as it goes. The main difficulty is the promptness of relief and the size of the dose. Just how much of the oil would have to undergo the change spoken of, we do not know; but is the interval of half to three-quarters of an hour that elapses before relief is experienced, long enough for it to be accomplished? It is given, too, in such doses that quantities of it appear in the stools unchanged. If glycerin given by the mouth would be so diluted before reaching the duodenum as to be of no service, the bulk of the oil would interfere with its action when formed from it by pancreatic juice. Beside that, the pancreatic juice itself would be so diluted with the oil, that we believe its effect would be scarcely perceptible in the time stated. We certainly do not believe that it can in so short a time split up *enough* of the oil into glycerin and fatty acids as to cause the unusual irritant and local reflex action described above. The theory, however, is an ingenious one, and well worthy of consideration."

TRANSMISSION OF DIPHTHERIA FROM BIRDS TO MAN.

To the Editor of The Medical News:

Sir: In the May issue of the *Annual of the Universal Medical Sciences*, an article clipped from the *British Medical Journal*, from the pen of M. Jules Menard, appears, relating to the transmission of diphtheria from birds to man, wherein the author asserts that the disease is never transmitted from one to the other. To use his own words: "There is no analogy between that form of diphtheria (which affects birds) and the disease as it affects human beings."

I wish to report a case which occurred recently in my own practice which, I think, demonstrates quite conclusively that the disease is sometimes transmitted from man to birds, if not from birds to man:

On November 16th, during an epidemic of diphtheria in this city, C. D., aged three years, was attacked by the disease. Under the usual treatment the child made a good recovery. On November 23d, seven days after the child became sick, a red-bird, which was confined in its cage in the same room with the child, sickened with all the symptoms of diphtheria, and the following day a canary, whose cage hung beside that of the red-bird, was attacked in the same manner. On the following day both birds died. Now the question arises, Was this a case of "bird diphtheria" (so-called), developing spontaneously during the time the child was affected, or was it due to direct transmission of the disease from the child to the birds? I am inclined to the latter opinion.

F. Horton, M.D.

Newcastle, Wyo.

NEWS ITEMS.

Iowa State Medical Society.—The fortieth annual meeting of the Iowa State Medical Society will be held at Waterloo on Wednesday, Thursday, and Friday, April 15th, 16th, and 17th, under the Presidency of Dr. W. D. Middleton, of Davenport, Iowa. A cordial invitation is extended to members of the profession to attend the meeting.

Medical Ignorance.—The following clipping from the Elk Hart (Indiana) *Review* has been sent to this office:

One of our physicians recently received the following letter from a country physician (?): "Dear dock I hav a pashunt whos phisicol sines shoes that the windpipe has ulcarated of, and his lung have drop intoo his stumick. he is unabel to swoller and I feer his stumick tube is gon. I hav giv hym evry thing without efeckt. his father is welthy Onerable and influenshial. he is an activ membber off the M. E Chirsch and god nose I dont want too loose hym. what shal I due. ans buy returne male. yours in neede."

Mississippi Valley Medical Association.—The Mississippi Valley Medical Association will hold its seventeenth annual session at St. Louis Wednesday, Thursday, and Friday, October 14, 15, and 16, 1891. A large attendance, a valuable programme, and a good time are expected. Members of the medical profession are respectfully invited to attend.

The following officers have charge of the meeting: C. H. Hughes, M.D., President; E. S. McKee, M.D., Secretary; I. N. Love, M.D., Chairman of Committee of Arrangements.

Association of American Physicians of Berlin.—About forty American physicians held a meeting on February 19, 1891, at Berlin, in order to found a permanent organization, such as exists in Paris, London, Edinburgh, and Vienna.

Professor Miller, now Professor at the University of Berlin, called especial attention to the fact that such an organization would not only greatly benefit the physicians who remain here for purposes of study, but also that it would call the attention of Germany to the forward tendency of American medical science. He strongly urged the publication of the *Transactions* of the Association every year.

A permanent organization was effected—Dr. Judson Daland, of Philadelphia, being elected as President, and Dr. F. Weber, of Milwaukee, as Secretary.

Professor Miller, Dr. Amos, of Iowa; Dr. H. Douglas, of New York; and the President and Secretary were elected as a Committee on Constitution.

As a Committee on Information to New-comers and on Organization of Special Private Courses, Dr. H. T. Brooks, of New York City; Dr. Louis Frank, of Louisville; Dr. Crystal, of Baltimore; Dr. Neal Mitchell, of Florida; Dr. Marple, of New York; and Dr. Kennedy, of Montreal, were appointed.

The objects and scope of the Society, as set forth in the preamble, are:

First. The arrangement of medical work and the formation of special private courses so that any desired instruction may henceforth be obtainable at this University.

Second. The giving of advice to new-comers regarding instruction, lodging, books, instruments, etc.

Third. The reading and discussion of papers of general interest, exhibition of patients, and demonstrations of specimens in all lines of work taken up by members.

Fourth. The furthering of mutual ends by a more extended acquaintance of the physicians here.

The Society at its first session listened to an interesting demonstration of specimens of myocarditis segmentaire, and of a blood-cyst of the aortic valve by Dr. Henry Douglas, of New York City. Dr. Weber then demonstrated specimens of blood of leukæmia and pernicious anæmia, and talked of the value of Ehrlich's method of blood-staining. Dr. Daland talked about malaria and relapsing fever in Russia, and demonstrated the pathological microörganisms of these diseases.

An interesting discussion of these papers followed, thus at once making the benefit of the Association apparent to all.

Drs. Fitzgibbon and Mead, of Wisconsin, and Navy Surgeon Kenyoun were present as visitors. Professor Miller then kindly offered the use of the Dental Lecturing-room of the University, Dorotheen-strasse 40, as a permanent meeting-room for the Society.

New-comers and others desiring information will please apply to the Secretary, Dr. Frederick R. Weber, Charité, Berlin.

Congress of American Physicians and Surgeons.—The meetings of the Congress of American Physicians and Surgeons will be held in Washington from 3 to 6 P. M., September 22, 23, 24, and 25, 1891. William Pepper, M.D., Chairman of the Executive Committee.

Licensing Boards.—At the suggestion of Dr. William Perry Watson, Secretary of the State Board of Medical Examiners of New Jersey, Dr. Rauch has called a meeting of one or more representatives of the various medical licensing boards in the United States, to be held in Washington, D. C., on May 6th, during the meeting of the American Medical Association, in order to effect a permanent organization and to make rules and examinations as nearly uniform as possible. Licensing boards now control medical practice in twenty-one States. It is expected that much good will come of this meeting.

Tuberculosis in Public Schools.—The Health Officer at Milford, Michigan, reported to his State Board that several deaths by phthisis had occurred in the public schools, and that school attendance had been noticeably affected thereby. He inquired of the Board if any pupil or person known to have pulmonary consumption should be excluded from school, as is required in the case of scarlet fever and other contagious diseases. The Board adopted resolutions declaring that such cases should be excluded during the active stages of the disease and until the symptoms of cough and expectoration cease.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING APRIL 4, 1891.

STEPHENSON, F. B., *Surgeon.*—Ordered to the U. S. S. "Marion."

BERRYHILL, T. B., *Passed Assistant Surgeon.*—Ordered to the U. S. S. "Marion."

WHITE, C. H., *Medical Inspector.*—Ordered to the U. S. S. "Baltimore."

CLARK, J. H., *Medical Inspector.*—Ordered to the U. S. S. "San Francisco."

HOEHLING, A. A., *Medical Inspector.*—Detached from President of Naval Examining Board.

CRANDALL, RAND P., *Assistant Surgeon.*—Promoted to Passed Assistant Surgeon, February 27, 1891.

BROWNELL, CARL DEWOLF, of Bristol, R. I.—Commissioned an Assistant Surgeon in the Navy, April 1st.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication, or 250 reprints will be furnished instead of payment, provided request for reprints be noted by author at top of manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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ORIGINAL ARTICLES.

THE TREATMENT OF SUPPURATION WITHIN THE FEMALE PELVIS.

BY NIEL MACPHATTER, M.D.,
OF DENVER, COLORADO.

I HAVE used the above caption in order to include all cases of suppuration, whether arising as the result of pelvic hæmatocele or that following inflammatory conditions of the tubes or cellular tissue. I do so in order to illustrate a principle in the treatment which I considered a great advance on that usually adopted, and one that has not yet received that attention to which it is entitled.

Turning first to abscess of the ovary and pyosalpinx, one cannot but be struck with the frequency of their occurrence. These are found in all ages from puberty on. How frequently they do occur has not yet been definitely determined, but sufficient evidence has been produced to show that they occur much more often than is generally believed, for large quantities of pus may lie in the ovary or tubes without producing any marked symptoms. As proof of my statement, I may only refer to the investigations of such men as Gregg, Fowler, and Lewars. The latter, after a careful investigation of one hundred consecutive deaths in women from all causes, found that no less than seventeen had had pyosalpinx. Of this number eight deaths were attributable directly to this condition.

It is not my desire to spend much time in consideration of the treatment of these two conditions, for the almost universal consensus of opinion in the profession is in favor of abdominal section, but will pass on to that of pelvic abscess proper. As there is a lack of opinion on the proper treatment in this disease, I will devote the balance of my paper to this important matter. As a preface, and speaking in general, there is no class of disease more unsatisfactory to treat nor more unfortunate to the patient than a pelvic abscess that has burrowed along a tortuous course and ruptured into the vagina, rectum, or bladder. This statement can be followed up with a parallel one equally true, that no class of disease which the gynecologist meets is more amenable to treatment than a pelvic abscess, providing it is taken before rupture and the formation of sinuses takes place; nor is there one to which he can insure more permanent relief.

Much discussion has taken place upon this important subject, because of its frequency and the evil consequences that often follow it. The views, I may say warnings, so persistently, but none too urgently, expressed, are becoming more generally recognized every day: and the claim that physicians delay too long in recommending surgical interference in many classes of female complaints, is in few of these more clearly justified than when a woman has a quantity of pus in her pelvis. Not only is there a great risk to life, but when deep and irregular sinuses take place, all lines of treatment become much more unsatisfactory and complicated. Occasionally, when the pus cavity ruptures it heals spontaneously, and the patient soon regains her health. This result is fortunate and much to be desired, for the number that rupture and periodically fill and discharge their contents, and continue as fistulous openings, is altogether too numerous.

Barring operations upon the vagina, cervix, or uterus—too often the starting-points of inflammatory conditions—I have long maintained, and recent events have added to the conviction, that in the history of a pelvic abscess, from an inflammatory cause, there are two periods in the treatment that call urgently for all the care and judgment of the physician, in order to prevent the catalysis that may occur. The first is, when sero-fibrinous exudations of lymph are thrown out, to cause a reabsorption, and thereby to avoid the formation of pus altogether. The second is, when the first object cannot be attained and the formation of pus goes beyond absorption, to have it evacuated by artificial means before it ruptures into some outlet, causing tortuous and irregular sinuses that will probably go on discharging for months or even years. When a severe attack of pelvic peritonitis, or so-called cellulitis, takes place about the third or fourth day after the onset of pain and fever, sero-albuminous and sero-fibrinous exudations are thrown out which can be detected by vaginal or abdominal examination. This exudation has at first a soft, almost boggy or doughy feeling, but afterward becomes much harder. In general, its size and extent will correspond to the severity of the attack. Not unfrequently all the cellular tissue, together with the tubes and ovaries, will be involved. It is at this stage of the process that much can be accomplished by careful and judicious treatment. The grand aim and object should be to aid in the

absorption of this exudation of serum, so that none may be left to cause the formation of pus. During this state perfect and absolute rest should be enjoined. This is peculiarly necessary. A sufficient amount of bland, unstimulating nourishment should be given. Local applications, such as poultices or flannels wrung out of hot water and turpentine, have often a beneficial effect. We are generally taught in our text-books that opium should be the main internal remedy given. Why this idea has become so thoroughly inculcated in the professional mind it is difficult to understand, unless it be on account of the advice long since given by the late Alonzo Clark, who recommended it in heroic doses in peritonitis and kindred diseases. His advice has been the cause of an incalculable amount of mischief. When you consider the physiological action both of the drug and the peritoneum, it will become apparent, and practical experience every day substantiates the conclusion, that, instead of being of benefit, opium is absolutely contra-indicated. What I have stated about the use, or rather abuse, of opium, finds its counterpart and applies with even greater force to the indiscriminate and empirical use of hot vaginal douches.

What will be found to be a beneficial remedial agent is small and frequently repeated doses of magnesium sulphate or Seidlitz powders, to secure a gentle daily motion of the bowels. When absorption has begun, small blisters of cantharides, about the size of a silver dollar, over the tumor, will be found excellent adjuncts. The patient should not be allowed to get up until long after all traces of enlargement and tenderness have disappeared.

Fortunate is the physician and thankful should be his patient when the trouble terminates in this happy manner. Occasionally, notwithstanding all care and skill in the treatment, absorption does not take place. It may take a variety of courses. It may remain for a long time stationary, ultimately breaking down and changing into an ichorous fluid and from that into offensive pus; or, it may form into numerous small abscess cavities in different compartments. These may remain an indefinite length of time encysted, but they ultimately burrow along through tortuous tracks and eventually rupture in some direction. The most frequent seat of this rupture is into the vagina, rectum, bladder above Poupart's ligament, or into the peritoneal cavity. All these are unfortunate terminations. The pus cavity will in all likelihood refill and keep discharging, rendering the patient a chronic invalid and making life a burden.

So soon as the medical attendant recognizes that the formation of matter has taken place, he should not delay in the hope that it will evacuate spontaneously, but should have it removed artificially and without delay. The principle I here advocate of opening these abscesses through the abdominal cavity, followed by subsequent drainage, is one that has given such excellent results as to justly entitle it to be considered the most satisfactory of all abdominal operations. When properly done it is almost entirely free from danger.

As suppuration is very frequently the result of the breaking down of a pelvic hæmatocele, and as the treatment is identically the same as when arising after inflammatory causes, it will be appropriate here to give a short paragraph to a consideration of the cause of this accident; and here we come upon a peculiarly interesting subject. It is now necessary to recognize the importance of the broad ligament in a physiological, but more particularly in a clinical, sense. Here lies the boundary line between a sudden, serious, and most alarming condition, and one of comparative safety. Both frequently result from the same course, yet the broad ligament draws a sharp line of distinction between their severity. It is not necessary for one to give a detailed anatomical description of these ligaments. It will suffice my purpose to say merely that they contain between their folds important vessels, and that any injury to these vessels will cause an effusion. From anatomical and physiological considerations, these effusions are either into the abdominal cavity or downward between these folds, giving us the two varieties of hæmatocele—intra-peritoneal and extra-peritoneal—the former fatal, if left to nature, ninety-nine times in a hundred, primarily from hæmorrhage or secondarily from suppuration and subsequent peritonitis. Everyone who has had much experience in abdominal surgery is familiar with the tendency there is for bleeding to continue when it occurs within the peritoneal cavity. Whether this is owing to the lymph which is always present there, rendering the blood too dilute for coagulation, or acting as an irritant and causing an increased secretion, it does not show much tendency to cease, save in a very imperfect manner. It rather keeps on until a dangerous, if not fatal, amount is poured out. This is quite otherwise with extra-peritoneal hæmatocele. There, as I have already stated, the effusion takes place between the folds of the broad ligament. There will be no lymph present there to render the blood too dilute for coagulation; on the contrary, it comes into contact with cellular and connective tissue, most powerful and natural hæmostatics. Again, the folds of the ligaments themselves form a limited cavity, so that it is almost impossible for a sufficient amount of hæmorrhage to take place to be dangerous to life. For these reasons this variety is not nearly so dangerous or fatal as when the effusion is into the peritoneal cavity.

It is due to the arrest of metrostaxis at the time

of normal menstruation, or to that pseudo-menstruation that occasionally follows operation on the ovaries or tubes. It is not dangerous, but delays convalescence for some time. It nearly always becomes absorbed, and seldom requires interference. A very frequent cause of this variety is the rupture of a tubal pregnancy downward. A hæmatocele of this kind comes on too suddenly to be inflammatory, and is indicated by a feeling of faintness, pain in the pelvis, small, rapid pulse, and sometimes the temperature rises. By examination there will be felt a soft, semi-fluctuating, doughy mass. The size will correspond to the amount of hæmorrhage. It is sometimes so extensive as to completely fill the cavity. When this is so, the rounded upper part can be felt above the brim of the pelvis. The upper limitations will correspond to the distended folds of the ligament. A remarkable and characteristic feature of this variety is an annular contraction of the rectum, caused by the blood pressing upon the lumen of the bowel, which renders defæcation difficult.

There can be but little doubt that many women have a metrostaxis following normal menstruation, and recover without ever consulting a physician. I am persuaded that a great number of these abscesses do not become absorbed, but go on to suppuration, and, eventually, if the surgeon does not come to the rescue, they burrow along in some direction, and finally rupture.

Heretofore, and, indeed, at the present time, the treatment usually adopted when the formation of pus takes place is by an opening made by a trocar or bistoury through the vagina, or waiting until the abscess finds an exit for itself. When they refill and discharge, efforts are made to facilitate drainage by dilating the sinus. I cannot regard but with apprehension the introduction of such instruments into these inflamed tissues. Such treatment is beset by innumerable difficulties and dangers. Experience daily illustrates the fact that there is considerable danger in passing a trocar, or other instrument, through the roof of the vagina. Beside the risk of doing irreparable injury to the bladder or a ureter, or to an artery, there is the uncertainty of finding the pus cavity. Should the surgeon be so fortunate as to come upon it, there is liable to be a *centre of débris* that cannot be removed in this manner. There is yet another probable chance that several pus cavities may be present, and then such treatment would not even be palliative, for obvious reasons. It is utterly absurd to endeavor to treat these cases, after their rupture, by dilating the sinus. I can understand that, when the abscess is well down and breaks directly into the vagina, such an opening may be all that is necessary; but these favorable cases are the exception. To follow the devious windings of sinuses high up is next to impossible. But the point I wish particularly to emphasize is, that we should not delay until this complication takes place, but as soon as pus is found accumulating we should have it removed without delay. Why the principles and laws that guide us in the accumulations of pus within the female pelvis should be different from those for the management of abscesses in other parts of the body, I cannot understand.

When properly done, the difficulties of the operation are comparatively few and the dangers are almost completely in the hands of the operator; so that to one accustomed to perform these operations the mortality is almost *nil*. When, however, the case has been neglected until the patient is reduced in health, and already has discharges of pus into the rectum, vagina, or bladder—and in those cases where all the pelvic viscera are bound down and matted together by dense adhesions—the difficulties become much more serious. Securing the walls of the abscess cavity to the abdominal walls, under these circumstances, becomes a troublesome task. This only illustrates the tenor of my argument, which is: Do not delay until this complication takes place. The general conclusion gathered from my own experience and from that of others is, that abdominal section for such abscesses is not a serious operation; that the recovery is much more rapid and certain; and that I cannot too strongly urge the advantages of this method of treatment.

1627 California St.

FIVE CASES OF SUPRAPUBIC CYSTOTOMY:

Three for Stone, One for Tumor in the Bladder, and One for Exploration with Catheterism of the Ureters; One Death.[1]

By W. W. KEEN, M.D.,
Professor of the Principles of Surgery, Jefferson Medical College, Philadelphia.

Case I. *Stone in the bladder; suprapubic cystotomy; prostatectomy; recovery.*—I was called to Vineland, N. J., September 12, 1888, by Dr. C. R. Wiley, to see Mr. B., aged sixty-five. He had had the usual symptoms of stone in the bladder for six years. A Petersen's bag was inserted in the rectum and distended with ten ounces of warm water. The bladder was injected with six ounces of water with four grains of boric acid to the ounce. Suprapubic dulness then existed to two inches above the pubes. The operation was done by the usual vertical incision, and two stones were removed, weighing together 763 grains. The prostate projected so much into the bladder at the mouth of the urethra that I removed a piece a slarge as the last joint of the finger, by the scissors. The bleeding was slight. The bladder was not sutured. A drainage-tube was inserted and removed on the tenth day: a catheter was retained in the bladder for four days more.

[1] Read before the Philadelphia Academy of Surgery, April 6, 1890.

The patient recovered without any trouble, his highest temperature being 100.6°, falling to normal, both morning and evening, within a week. The wound healed entirely in four weeks.

In July, 1889, he had a return of his old symptoms, and Dr. Joseph W. Hearn, being in Vineland, was asked by Dr. Wiley to see him again. Dr. Hearn having detected a stone by the sound, reopened the former wound by dilating a small fistula which had appeared, then crushed and removed two stones, weighing 412 grains in all. After that time he was well until his death recently from another disease, as Dr. Wiley informs me.

I have no question that the stones removed by Dr. Hearn had formed since the first operation, for the entire interior of the bladder was inspected at that time and no further stone was detected.

CASE II. *Ankylosis of the knee; stone in the bladder; suprapubic cystotomy; recovery.*—R. J. B., of Bridgeton, N. J., first consulted me June 19, 1888. A tall, spare man, aged forty-three, with ankylosis of the left knee from a white swelling twelve years ago. Has also suffered considerably from rheumatic gout, and has a deformed right hand following it. There is also considerable ankylosis of both elbows. He passed a stone from the bladder for the first time in 1876, and since then has passed dozens of them, mostly phosphatic, and he has had also renal trouble from gravel, attended with hæmaturia, seven or eight years ago. He has passed no stone by the urethra for eighteen months, but his present attack of vesical irritation has existed for three years. He is obliged to empty the bladder from one to four times an hour. Urine, specific gravity 1011, small amount of pus and albumin, with phosphates; reaction faintly alkaline.

Operation, June 4, 1888. The patient desired that the "high operation" should be done in order that the condition of the bladder could be explored by the eye and the finger at the same time that the stone was removed. The ankylosis of the knee, as well as his wish, made me decide to do the suprapubic operation. The rectal bag was distended with ten ounces of warm water, and the bladder with seven ounces of water with four grains of boric acid to the ounce. The dulness of the distended bladder extended two inches above the pubes. An incision two and one-half inches long was made and the bladder easily reached, except for the difficulty with the anæsthetic, as mentioned later. An incision two inches long was made in the bladder and the stone was extracted. Its shape was that of a flattened sphere; it weighed 421 grains when dry, and its surface was quite smooth except at the edges.

The bladder wound was then closed with eight stitches of interrupted fine chromic catgut. The bladder was now injected with warm water combined with the boric acid in order to test the accuracy of the closure of the wound. No water escaped. The wound was then filled with water and the bladder was injected with nine ounces of air, when instantly a leak was discovered by the air bubbling up through the water. A stitch closed this, and made the bladder both air- and water-tight. Six stitches closed the wound in the abdominal wall, which included with care the aponeurosis of the abdominal muscles. The peritoneum was not recognized during the operation. A flexible catheter was inserted into the bladder, and its end was at first corked up and the bladder emptied every hour; but, as this caused some pain, the catheter was uncorked and continuous drainage into a urinal substituted.

6th (2d day). He has had no pain; his highest temperature is 100°; he is hungry, and has slept well. The wound was re-dressed yesterday, when everything looked well.

Four days after the operation there was considerable local tenderness and irritation, and on the sixth day this was so marked that I removed the stitches and evacuated some urine and pus, which had formed as a result of the giving way of the stitches in the bladder. The wound was drained for a few days and then closed, and he went home on the 25th, three weeks after the operation. Since that time he has had no trouble.

REMARKS.—No other operation than the suprapubic could have been done in this case on account of the ankylosis of the knee. The operation was an extremely difficult one, because unless he was deeply anæsthetized he was struggling, with the abdominal walls as tense as boards, and in order to relax them anæsthesia had to be carried to a point which I felt involved serious danger. Between Scylla and Charybdis it was very difficult to steer a safe course. The difficulty was especially great in suturing the bladder. In fact, I think it would have been wiser had I not attempted to do so, but had simply drained.

CASE III. *Stone in the bladder; surgical kidneys; death from sudden œdema of the lungs.*—W. H. C. was referred to me by Dr. Julius A. Johnson, of Easton, Md., December 11, 1889. His age is fifty nine; his weight two years ago 185 pounds; at present about 135 pounds. Seven to eight years ago he first noticed that his water was passed very slowly. Four years ago had a brief attack of apparently acute inflammation of the bladder. Two years ago another attack of acute inflammation, with very thick urine, and required catheterization; has used a Nélaton catheter himself more or less ever since. Passes his water about ten times in the twenty-four hours; has never passed any blood, except as a result of the use of the catheter, he thinks. Has no pain in the small of the back, but suffers severely in the bladder and perineum, for which he has taken from one-half to one grain of morphia a day for about two years. In spite of his wasting, his appetite is good, and also his sleep, excepting that it is interrupted by the necessity of passing his water.

Eight years ago, while brushing his teeth, he touched a nerve, he thinks, and for a few minutes his face was "drawn." From one to two years later, while going home to dinner, his left arm and leg became weak, and he had no use of them for a

few minutes. He did not fall, but sat down, and after a short time walked home. A few times since then he has felt as if a similar weakness was coming on; seizing his wrist stopped it. In October, 1888, on a Saturday he had a fever and a chill from exposure to cold. On the following Tuesday his wife gave him a hot toddy. A little while afterward, while sitting in a chair, a "queer look" came over his face, so his wife states, and for a few minutes he "talked thick," but after that had no further trouble. He has never had any headache.

He has had at least three considerable hæmorrhages from the bladder. He is not quite sure, but thinks that the hæmorrhages came on only at the end of micturition, except the last time, when the urine was uniformly bloody from the beginning. The longest of these hæmorrhages continued for two to three days. By spells the urine has been alternately clear and bloody, and its passage attended with considerable soreness, which passed away as soon as the hæmorrhage occurred.

Once he passed a small calculus the size of a pea, and probably one hundred of about the size of a pin-head; these last at varying times.

Operation, December 26, 1889. I was assisted by Professor Brinton and Drs. Horwitz and Coplin. Owing to the bad condition of his kidneys, chloroform was given instead of ether. The field of operation was thoroughly prepared the day before. Petersen's bag was inserted into the rectum and distended with twelve ounces of warm water. I had not examined his bladder instrumentally before, as it gave him great pain even to introduce a soft instrument, and in view of his general poor health and the damaged condition of his kidneys, I determined not to give an anæsthetic twice. In order to fill the bladder as well as to explore it, I now introduced a silver catheter. The instant it entered I struck an evidently large stone. After washing out the bladder, nine ounces of warm, boiled water were introduced through the catheter; as soon as this limit was reached the water began to escape alongside of the catheter, and to prevent its further escape, rubber tubing was tied around the penis. Notwithstanding this double dilatation, the belly was still resonant down to the pubes, though the resonance slightly diminished as the pubes were approached. An incision was made in the middle line from the pubes three inches upward. As soon as the belly-wall was cut through, the peritoneum was encountered, reaching all the way to the pubes. It was readily lifted to the upper end of the incision, but as it was more than usually thin, and required an additional assistant, I determined at once to get rid of this necessity and danger, by placing the patient in Trendelenberg's position. A tall, stout nurse, with his back to the patient's perineum, took the patient's knees over his shoulders and thus lifted the pelvis about a foot from the table. The peritoneum at once disappeared at the upper extremity of the incision. The bladder was still so deep that a possibility, even, of its rupture from the injection suggested itself to me. It was found, chiefly by the aid of the catheter which had been placed in it, at a depth of three inches from the skin. Several large veins were first ligated, both on the bladder-wall and in the connective tissue in front of it. The bladder was then opened, and one large and three small stones removed. The small stones were about the size of Lima beans; the large one crumbled down, under the grasp of the forceps, into a number of fragments; the stones were phosphatic. The weight of all that was recovered was just 600 grains, and I estimated that fifty or sixty grains were lost in the débris in washing out the bladder. The wall of the bladder was much pocketed, and the three small stones were found in these pockets, and would almost inevitably have been overlooked had any other operation than the suprapubic been done. They were readily extracted by the finger in searching for fragments. The prostate, which had been found but little enlarged toward the rectum, was greatly enlarged on the vesical aspect, the enlargement being chiefly in the middle line and to the right, forming a uniform, rounded mass, bulging into the bladder just behind the orifice of the urethra, but not blocking it. Prostatectomy, therefore, was not done.

The walls of the bladder were rugose and about three times their natural thickness. The wound in the bladder was not closed. A drainage-tube of soft rubber with a bulbous end was introduced into the bladder. As there was so large a space between the bladder and the abdominal wall, I thought it prudent also to introduce a second drainage-tube for the first forty-eight hours into the pre-vesical space. The abdominal wall was then closed by interrupted sutures, the two drainage-tubes coming out together at one interspace.

31st. Reacted very well from the operation. For two days he had slight vomiting, and on the third and fourth days considerable hiccough, which yielded to one-quarter grain doses of cocaine. His temperature fluctuated between 97.9° and 99.6°, only once reaching 100°. The wound was irrigated through the drainage-tube with warm boric acid solution. The pre-vesical drainage-tube was removed at the end of forty-eight hours.

When I left him at 5 P. M. on the 30th (the fourth day) I felt very well satisfied with his condition and quite assured of his recovery. So far as could be judged, the amount of urine secreted was ample, and there was no danger apparently from the kidneys. At 9.30 P. M. on the night of the 30th acute œdema of the lungs set in, followed by death in seven hours. No post-mortem could be obtained.

Remarks.—This operation was only undertaken in view of the urgent symptoms. The bad condition of the kidneys and his serious antecedent history of cerebral disturbance of course contra-indicated operation, but his suffering from the stones in the bladder was so intense that relief was absolutely necessary. That life was terminated by the sudden œdema is not to be wondered at in view of the renal complications.

No case ever showed me better the value of Trendelenberg's position. The moment he was placed

in that position, not only did the peritoneum fall down and away, but the bladder was made accessible, although being so deeply placed. Neither the rectal bag nor filling the bladder with water raised it to the abdominal wall, and I was seriously afraid that the bladder had been ruptured, although no more water was injected than the capacity of the bladder easily permitted.

CASE IV. *Papilloma of the bladder; removal by suprapubic cystotomy; recovery.*—Mr. S., aged fifty-seven. (The following history was furnished by Dr. Lorini, his medical attendant.) Family history negative; no cancer. He had malaria in the sixties with biliary fever. He had marked trouble with his gall-bladder from 1878 to 1881, and visited Carlsbad, since which time he has had no return of the trouble. There is no history of urinary calculus or gravel. In 1885 he had an attack of cystitis with blood in the urine for a few days. He was circumcised in 1887. For thirty years he has had a sense of discomfort in the small of the back. About August 1, 1889, after a horseback ride at Ocean Beach, N. J., bleeding from the bladder began, but yielded to internal remedies after two days. August 15th, another attack came on and continued for a few days, but yielded again to the same remedies. In January, 1890, a third attack lasted for nine weeks, in spite of internal remedies and the actual cautery over the back. In April and May his bladder was washed out with boric acid and nitrate of silver solutions of various strengths. After five days the bleeding stopped, but returned again about the middle of June, and continued up to the middle of August, in spite of the use of the nitrate of silver and boric acid solution. He spent the summer in Maine and gained greatly in health. The capacity of the bladder was undiminished, and the urine contained neither casts nor albumin when there was no blood. There was slight prostatic tenderness. The blood was always thoroughly mixed with the urine from the very start, whether drawn by catheter or voided voluntarily. Clots were passed from time to time. These were of irregular shape and seemed to be fewer and smaller when he led an active life, more numerous and larger when he rested. No shreds of tissue have ever been found, in spite of the most careful watching, except one minute specimen, which was thought to be papillomatous, and the deeper cells possibly sarcomatous, by Dr. F. A. Packard.

November 13, 1890, the hæmorrhage returned more profusely than ever, and has continued to the present time, in spite of internal remedies, washing out the bladder, hypodermics of ergotine, etc.

Status præsens, Dec. 7, 1890. When I saw him for the first time, at this date, I found a short, stout man who appeared to be in good health, but with an anæmic, pale skin, and who was evidently suffering from the mental depression incident to the continued hæmorrhage. He had lost but little flesh, and his anæmic appearance, as was stated to me by Dr. Lorini, who had known him for many years, and under whose care he now was, was habitual and not a result of the bleeding, a rather surprising fact in view of the amount of blood lost. I saw him void his urine, which was porter-colored from the first drop. There were some small clots of irregular shape, and from the amount of urine passed and its color and clots I estimated that the amount of blood lost was not far from half a pint a day. Dr. Crozer Griffith examined a specimen of the urine for me. It showed no casts; a large amount of blood was present, with an excess of white blood-cells, which in some places were adherent to each other in masses, as in cystitis and other suppurative processes. No epithelial cells were found. Fragments of possible tissue were examined and found to be only clots which had rested somewhere in the urinary tract sufficiently long to become largely fibrinous. The urine contained 2 per cent. of urea. The blood count showed 3,890,000 blood cells, 53 per cent. of hæmoglobin, and no plasmodia. A careful examination of the region both of the bladder and the kidneys, not only by myself but by Drs. Lorini, W. J. Taylor, J. William White, and William Pepper, was entirely negative. There was no dulness, no tenderness, no pain, but simply hæmaturia and nothing more. On December 13, 1890, I attempted to examine the bladder by the cystoscope, but was unsuccessful in detecting anything. The bloody urine was first drawn and replaced with a warm boric acid solution, but in spite of the most careful use nothing further could be seen.

The day after the use of the cystoscope he observed in urinating that some air or gas bubbled out. I attributed this naturally to some air which had been injected into the bladder with the fluid, but he called my attention to this difference: that at the present time the gas produced no pain, but that when air was injected it produced distinct pain as it often had done a year ago when washing out his bladder. This discharge of air or gas has continued up to the present time. It does not occur with each act of urination, but occurs at least once a day, and takes place at the end of urination, not at any other time. It is especially noticed when he strains to press out the last few drops from the bladder. So far as he can observe the gas has no odor, and I have observed that the urine has none, nor have the clots that have been passed. He has had no pain in his bladder or rectum.

His wife tells me that she thinks there is a distinct loss of strength in the last few weeks, and also that for the last year or more he has been more drowsy than formerly.

Operation, December 29, 1890. Assisted by Drs. J. William White, William J. Taylor, Orville Horwitz, J. C. Da Costa and Dr. Lorini, his physician. The bladder was first washed out and then filled with 9 ounces of a boric solution, a drachm to the pint. The Petersen bag in the rectum was then dilated with warm water, but as soon as the capacity of eight ounces was reached the resistance became so great that I desisted from introducing any more. An incision in the median line disclosed the bladder, which was secured by two ligatures and then incised. As soon as the finger was introduced I perceived a

small tumor near the right ureter. With the electric light it was inspected, though with some little difficulty. In doing so I used both Watson's vesical speculum and my own, but each had to be supplemented by a long pair of forceps to push back the posterior wall of the bladder. The tumor was about the size of the end of the forefinger, say a little over half an inch in diameter, and about the same in elevation. It was strawberry-like in its appearance, though not quite so red. Near to it were two other small elevations of the size of a moderate pin-head, which were thought possibly to be the beginning of similar growths. There were several other very minute growths, but so small as to make it doubtful whether they were normal or pathological.

The tumor and the two small elevations near it were seized by the forceps and drawn forward somewhat forcibly, and the mucous membrane for some little distance around the base was removed with the tumor by curved scissors. The bleeding was very moderate and required no special means for its control.

One stitch was put in the wound in the bladder and four stitches in the abdominal wall. Two drainage-tubes were introduced, one into the pre-vesical space and the other into the bladder, both secured in place by stitches in the skin. A large wood-wool dressing was then applied over the wound, and aristol ointment spread over the abdomen under the dressing. The dressing was to be changed whenever it was wet, and the bladder to be washed out with a warm boric acid solution.

He was put to bed in a very fair condition. During the operation Trendelenberg's position was also tried, but its advantages were not very manifest. Still there was, I think, slightly greater ease of access to the bladder. The ureters were seen and an attempt was made to catheterize one of them, but without obtaining any urine. In justice to the procedure, however, it should be said that we did not persist long enough, probably, to make the attempt valuable. We had found sufficient to account for his condition, and we did not deem it just to him needlessly to prolong the operation.

No communication was discovered between the bladder and the bowel, though the interior was carefully examined at every point.

January 1, 1891 (the third day). Since the operation, now three days, he has gone on steadily improving. His highest temperature was on the night following the operation, since which time it has been 99° and a fraction. The wound looks perfectly well. On the second day he developed spasmodic pain, which he referred to the prostate, the attacks of which were quite severe. Thinking that it might be due to the pressure of the end of the drainage-tube in the bladder, I removed this rubber tube and replaced it with a shorter tube of glass, but during yesterday, his pains being so severe, Dr. White, as I was absent from the city, removed the tube from the pre-vesical space. This was not followed by immediate relief, but with some amelioration of the attacks, and finally their disappearance at the end of about twenty-four hours. The tube in the bladder I removed to-day. His appetite is very good, so that he enjoyed a small chop yesterday and a small beefsteak to-day. His sleep has been very fair.

3d (fifth day). He has had a good deal of vesical tenesmus, for which I cannot see any reason. The wound looks well. Two of the four stitches were removed to-day; some small shreds of sloughing connective tissue came away. In examining the rectum a few days ago Dr. White thought he detected a nipple-like prominence, just as would exist if there were a fistulous opening in the rectum, and at the operation a pouch in the posterior wall of the bladder was discovered, which possibly corresponds to this, although no opening or other lesion could be detected either at the operation or since. A large enema yesterday emptied the bowels thoroughly, and there has not been, either from the bladder or from the bowels, any evidence of communication between the two.

From this time on he improved very rapidly. His pain quickly lessened and the wound closed at the end of five weeks. Since that time he has been perfectly well. There has been no escape of fæces or of gas from the urethra, nor has there been the least return of the bleeding.

The tumor was examined by Dr. J. P. Crozer Griffith and Dr. Burr, and was found, on section, to be a compact sessile form of papilloma without any filiform fringes.

Case V. *Possible tumor of bladder; boutonnière operation; later exploratory suprapubic cystotomy, with catheterism of the ureters by the aid of the electric light; recovery.*—M. H., of Mauricetown, N. J., aged twenty-eight; weight 121 pounds. Was referred to me by Dr. Samuel Butcher, November 22, 1889. Family history negative. No venereal history. On June 5, 1887, when he rose from bed he passed clear blood from the bladder without pain and without apparent reason, he being then apparently in perfect health. The blood was intimately mixed with the urine from the very first drop. With slight intervals the urine has been bloody ever since. A week after the hæmaturia he became a little better, when a sudden retention for twenty-four hours was followed by the evacuation of a quantity of clots. There are usually no clots, but the blood and urine were intimately mixed. For the first year he suffered a little pain; since then he has only had slight pain in the loins, possibly more marked on the left side. In June, 1888, he had bilious fever, and in December, 1888, and January, 1889, clots accumulated again and required a catheter. He thinks that occasionally the clots were long and slender, especially when few in number, being one to two inches long and about the thickness of a pin.

When clots accumulate in the bladder he has considerable pain near the anterior superior spine; his water then clears up and is apt to be more colored when the pain disappears. No calculus is discovered by sounding, and there is no pus in the urine. He passes about the usual quantity and urinates five or six times a day. Nothing is found in the urine by microscopic examination but blood. A small amount of albumin is present when there is blood

in the urine, but when there is no blood the urine is absolutely free from albumin.

Dr. Hearn examined the patient some months ago, and believed that there was a papilloma in the bladder. I admitted him to the Jefferson Hospital in December, 1889, and watched the urine with great care. No long, slender clots were at that time found, but only irregular-shaped clots. Small fragments of a possible papilloma were watched for carefully, but only one or two were found at intervals, which were believed by Drs. Longstreth and Coplin to be fragments of a doubtful papilloma. The renal symptoms were practically *nil*, for the pain in the loin was but slight, and scarcely more marked on one side than on the other. No increase in the dulness over either kidney was noted, nor was there any tenderness on palpation by one hand nor on bimanual examination. The tenderness near the anterior superior spine only existed when there were clots in the bladder, and there is no tenderness at present.

First operation, January 3, 1890. I explored the bladder by the boutonnière opening. As soon as the finger entered the bladder, I found at the upper right wall posteriorly a soft, velvety mass. Whether it was a tumor or the bladder-wall I was not able definitely to decide. I introduced a pair of smooth-bladed stone-forceps until the bladder-wall was touched, then withdrawing them half an inch and closing the jaws I found that I had grasped something, which by traction gradually yielded with a sensation as if thread after thread was being torn. In the jaws of the forceps was a florid mass, looking not unlike a blood-clot, but traversed by threads which looked like fibrous tissue. Nothing like mucous membrane was seen. A number of small masses were removed in this way, amounting in all to a mass about twice as large as an English walnut. Twice I tried Sir Henry Thompson's serrated tumor forceps, but both times, in spite of using every precaution, I found that I had caught the bladder-wall, as was manifested by its not yielding after the same gentle traction as before, and by the mucous membrane being drawn into the wound. The bleeding was inconsiderable. Watson's perineal drainage tube was inserted.

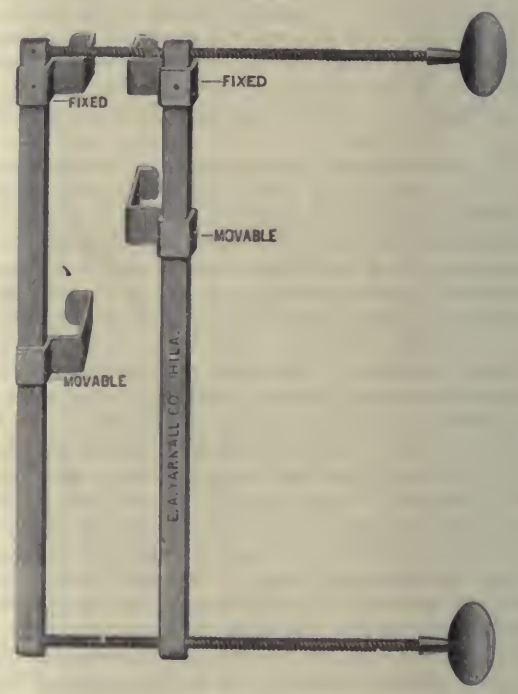
He recovered from the operation without difficulty, the wound closing in twenty days, at which time he went home. The urine at first cleared up considerably, though afterward it again became bloody, but two months later it was almost clear. The mass removed was again submitted to Drs. Longstreth and Coplin, but in spite of careful examination they were still doubtful whether the masses were blood-clots or fragments of a papillomatous growth, although rather inclined to the latter opinion.

May 23d. He has gained fifteen pounds in weight, feels much better, and has had no pain since the operation. The urine has generally been clear until the last two or three weeks, when the blood has reappeared, with small clots. I have repeatedly seen him pass his water, both before the operation and since, and it is uniformly bloody from the start.

November 15th. I examined the bladder by the cystoscope, but could only see a uniformly red and apparently healthy bladder-wall.

Second operation November 18th, at the Jefferson Medical College Hospital. Nine ounces of warm boric-acid solution (four grains to the ounce) were injected into the bladder, and eleven ounces of warm water into the rectal bag. The injection into the bladder alone produced dulness of but one finger's-breadth above the pubes. This was increased, by filling the rectal bag, to 2.5 inches. A three-inch incision in the middle line disclosed the bladder very readily. The peritoneum was not seen. The bladder was opened, and the edges of the opening caught with two hæmostatic forceps. A special retractor, which I had devised (Fig. 1), was

FIG. 1.



then inserted, in order both to separate the recti muscles and the edges of the opening in the bladder, and a small, hooded, two-candle power electric light was used to examine the bladder. A prior examination by the finger the moment that the bladder was opened gave an entirely negative result. The examination by the electric light was extremely satisfactory; on the right upper and posterior wall of the bladder was seen a scar about one and one-half inches in diameter, evidently the result of the first operation. It was smooth and healthy. I found a good deal of difficulty in examining the posterior wall, inasmuch as the bladder contracted as soon as the water escaped, and was thrown into deep folds. By inserting the angular large hæmostatic forceps, or pedicle forceps, and opening the blades, I was able to push the bladder upward and unfold the creases in its wall. To obviate this difficulty I have lately devised another instrument (Fig. 2) which as yet I have not had an opportunity to test. I then

discovered between and above the orifices of the ureters a small ulcer, a scant quarter of an inch in diameter, possibly tubercular. A piece of the bottom of it was pinched off for examination microscopically, but showed no bacilli.

Fig. 2.

Bladder-dilating instrument.

I found that I could examine the posterior wall of the bladder a great deal better when the rectal bag was removed. The orifices of the two ureters were seen, and both successfully catheterized. From the left ureter bloody urine was obtained, and from the right one clear urine.

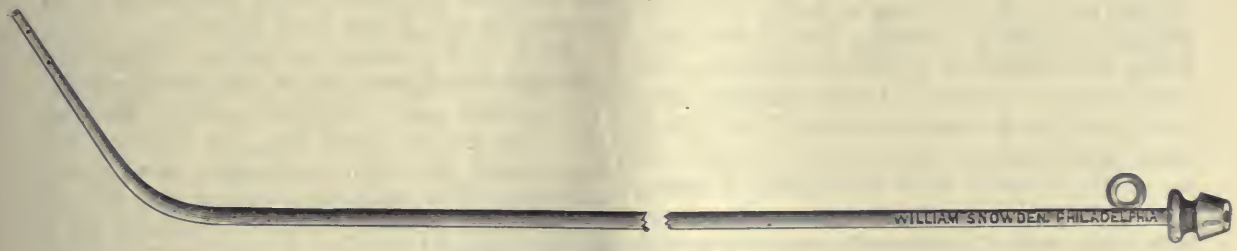
When the urine escaped into the bladder no difference in the urine from the two ureters was perceptible, as the red wall of the bladder made both look alike. But when they were collected in a small glass cup the difference in their appearance was instantly perceptible.

recovery. He still has bloody urine. Whenever he is ready I intend to explore the left kidney.

Remarks.—In the case of M. H. (Case V.) I have been a good deal puzzled as to what it was that I removed at the first operation. Certain it was that the mass was adherent to the bladder wall, and certain it was, also, that it was not the mucous membrane. The differentiation by means of the two kinds of forceps was perfectly clear. In some way the blood-clot apparently became attached to the wall of the bladder and sufficiently attached for its removal to leave a visible scar.

The catheterization of the ureters in this case by the aid of the electric light was perfect. I beg to call especial attention to the fact that the difference in the color of the urine from the two kidneys could not be noticed so long as the urine escaped into the bladder, for the uniform redness of the mucous membrane prevented the true color from being detected. Only when the water was drawn in a glass was the difference between the two distinctly perceptible. Whether the hæmaturia which is now determined to be from the left kidney is a case of hæmophilia, pure and simple, for which Brown[1] has recently done a successful nephrectomy, or whether there is any true disease of the left kidney I do not know. It was only after the catheterization of the ureters that the significance of the slender, cylindrical clots was really known. It is true that the question of ureteral clots had been considered, but yet when I saw him nothing had been seen that resembled them, nor was it at all

Fig. 3.



Instrument for catheterizing the ureters.

To facilitate this ureteral catheterism I have devised an angular catheter which I believe will be of service (Fig. 3).

The opening in the bladder was then stitched, except at its lower end, where a drainage-tube was inserted. The external wound was partly closed.

December 8 (three weeks). The patient went home to-day. The drainage-tube was removed on the second day after the operation. The rest of the wound healed very well, but the opening in the bladder did not close until two weeks after the operation. Until that time the urine had been much freer from blood, but it now became much more bloody. No especial incident attended his

certain that they were anything more than accidental. They were certainly not common.

As a result of my present experience with the boutonnière and the suprapubic operations, I would certainly prefer the latter as by far the better. In view of the persistent hæmaturia, with its baneful effects both on mind and body, I propose to explore the left kidney whenever the patient is ready, and if the indications point that way, to do a nephrectomy.

[1] American Journal of the Medical Sciences, November, 1890, p. 522.

Case IV. resembles this one in many ways. In both the hæmaturia was the only symptom present, and the diagnosis was correspondingly obscure. Although Mr. S. had the advantage of the most skilful diagnostic opinions, yet it was with great doubt as to whether the papilloma really existed in the bladder or not, that the operation was begun. It was clear, however, that something ought to be done, for the disease was making inroads on the patient's nervous system quite as much as on his physical condition. The kidney was so absolutely exempt from any indication of disease, that it did not seem right to explore there; and even if I had decided to do so, the question *which* one, was still a difficult one to solve. I would call especial attention to the fact that in both these cases the urine *was uniformly bloody from the beginning of micturition.* In the case of M. H. (Case V.) it ought to have been so, for it came from the kidney, but in the case of Mr. S. (Case IV.) it ought not to have been so, for as a rule a tumor in the bladder bleeds only toward the end of micturition when it is squeezed by the contracting bladder. The element of uncertainty thus introduced was very puzzling.

SURGERY OR ELECTRICITY IN GYNECOLOGY.

BY HORATIO R. BIGELOW, M.D.,
OF PHILADELPHIA.

"THE difficulty of separating a man from his opinions tends often to give scientific controversies the appearance of a personal attack, when nothing should be further than that from the minds of those engaged upon the questions at issue. Jealousy for truth should so absorb the attention of all honest workers that friction of thought, as afforded by free discussion, should be courted as a means for stimulating the intellectual processes essential to the development of science. If the maintenance of individual opinion is the chief object in such discussions, they degenerate into trials of strength, and are utterly useless so far as the interests of science are concerned. Indeed, one might as well contend with a stone wall as to attempt to argue with a mind that is not open to conviction."[1] This is very happily phrased, and altogether truthful. Who shall define the "stone wall?" If my "doxy" be not to the liking of my professional brother over the way, he immediately infers that I am not open to conviction, because I cannot accept his demonstrations as proven facts. And, as opposed to this, I may be quite as prone to think him stubborn, or a victim of one "idea," because he fails to keep in elbow-touch with me. Here lies the necessity of that power granting the "giftie" to see ourselves as others see us. Here the necessity, also, of close introspection to see if the fault be really not a personal one, in which our scientific blindness is the result of prejudice. To arrive at the point of conviction, the more especially if such conviction shall carry with it the necessity of a total surrender of previous views, practices and opinions, the argument must be based upon a solid foundation of fact—as opposed to inference—upon the best possible investigation of the claim, in the clearest light of the most recent developments. I should not, for instance, care to surrender my present opinion of the value of gynecological electro-therapeutics upon the simple record of the doctor's experience; neither would she, if I read her tenacity of purpose aright, forego the surgical euthanasia of the scalpel, because I consider laparotomy a greatly condemned and sadly handicapped alternative, with much of humbug in its claims. I may be the "stone wall," or the doctor may be. With the opinions of intellectual men pretty evenly divided upon the question, and with goodly hosts behind each of us, clearly the much-berated middle-man must be called in to decide between us. This middle-man is the consentient verdict of the profession which will be delivered after all the evidence is in. I have said that the doctor's argument would not carry much weight with me, since I should be inclined to question the method used, no matter by whom employed. I am more than ever impressed with the danger that may befall a useful discovery by enthusiasm and faulty tools, since I have examined the electrodes used by some practitioners in the United States, and since witnessing their limited knowledge of electrical currents. For the good of the cause, for the honor of the good name of my master, Apostoli, I must speak plainly.

There are few among us, whether calling themselves pupils of Apostoli or not, who use his method. When people assert, as I have heard it asserted, that they get no result from the galvanic current, though they try it thoroughly, using a *one-cell battery*, I am inclined to believe that they do not know the difference between a galvanic and a faradic current. But this is really not a particle more lamentable than the efforts of a physician to arrest the hæmorrhage of a uterine myoma by using within the cavity a *small platinum electrode*—and yet these small electrodes are used almost exclusively by those employing electricity in this country. *The only kind of an electrode that will surely arrest bleeding in the vast majority of cases is one that will completely fill the whole cavity of the uterus, so that not one bleeding-point shall escape.* After the most thorough application with the platinum electrode the bleeding often continues. Why? Simply, because only one part of the endometrium has been reached, and the other bleeding-points are un-

[1] Dr. Anna M. Fullerton: Annals of Gynecology, January, 1891.

touched. Hence Apostoli's device of olive-pointed carbon electrodes of different sizes. The doctor has had some inflammatory reaction after some applications. In a very large experience with the method of Apostoli I have never seen one such, save in a few cases of puncture of big pus tubes, when there should be rightly and necessarily more or less reaction. Did the doctor ever see a laparotomy without some kind of reaction? Why have I seen no such reaction? Because the applications were all made by a man who knew what he was about—by Apostoli himself. The doctor feels "in floundering about after such blind guides, as if the earth beneath our feet was 'without form and void;' and as if the dictum of the Creator, 'Let there be light!' would alone dispel the mists which still shroud in darkness the properties and activities of this wondrously 'subtle' and 'potent' agent." I am sorry that the good doctor should flounder about so hopelessly, but flounder she must, unless she, of herself, will study up the subject, and then, with proper knowledge and proper tools, apply the subtle agent as the necessities of the case may demand. If she wants to be well served she must serve herself, and if she wants to be really honest and just, she must be sufficiently *au courant* with the subject to know that the method is being used as it was intended to be used. To one who will read his writings without surgical spectacles, and who will not offer to public criticism little bits of excerpts here and there, there is nothing obscure in what Apostoli has written. The obscurity is within the brains of those who do not want to understand—another "stone wall," as it were. I would say: *Go as high as the patient can stand it*, and as *the clinical indications need*. This seems to me, and will seem to anyone else who has had sufficient experience in electro-therapeutics, even when conjoined to the other citations made by the doctor from the writings of Apostoli, to be plain enough. Why flounder in this? Is not individual idiosyncrasy a fact recognized by physicians? And this is the summing-up in a word of what Apostoli says. Find out the idiosyncrasy, and regulate the dose accordingly. This is what he says. Good, plain sense, and easy of comprehension.

I use intra-uterine applications and punctures continuously in the dispensary work in which I have the honor to be associated with Dr. Massey. There is no objection to it, *if the method be carried out in all of its details*. I would ask the doctor if she has not found it rare among her pupils, and indeed among practitioners as well, to find one who could introduce the sound easily up to the fundus, or to find *any one* who could introduce it in a canal made extremely tortuous by a fibroid growth. I have seen the effort made over and over again at Apostoli's clinic, by men well educated in the gynecological world, without success. I know of one, as highly placed as any name on record, who totally failed to introduce the sound in a case where the cervix was pressed against the symphysis pubis and the canal extremely tortuous. Yet, with marvellous deftness, Apostoli introduced it in a twinkling. Now, until this dexterity has been acquired, it would be folly to practice electro-therapeutics, because with each application half of the endometrium would escape. I would also like a more definite statement from the doctor as to the current strength used, and the particular current employed, whether + or —. I believe the doctor to be thoroughly honest in the expression of her views. I believe her to be sincere in her search for truth, and I believe, without questioning, that she did her very best to demonstrate the value of electricity; but since her experience is so entirely opposed to my own, I must believe that there was something wrong, either in the application or in the diagnosis. Electricity will not answer in all cases. It will do harm under certain conditions. It is the duty of the thoroughgoing electrician to differentiate between these. A harum-scarum service, with unbounded faith in electricity as a panacea, is the devil's work, and will go to the wall when attacked by professional morality. It is not a panacea. No good man and true has ever said it is. The services of the surgeon will always be needed. We all admit it. We hope, however, to reduce the number of cases that seek surgical interference, and this, too, with a painful appreciation of the consequent tumble of incomes that may result. Let me commend to all readers of The Medical News the article presented by Dr. Apostoli, at the Tenth International Medical Congress at Berlin last year, which has been translated for the *Annals of Gynecology* by Dr. Lapthorn Smith.

Bingham House.

ON CERTAIN FORMS OF TREMOR.

By HENRY S. UPSON, M.D.,

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It is a striking fact that, although much light has in late years been thrown upon the pathology of paralysis and anæsthesia, the organic changes which cause tremor are almost as little known as ever, being confined to the two suppositions, that tremor is often caused by lesions in and about the optic thalamus, and that it may sometimes be of cortical origin. Of the possibilities of tremor from spinal cord and peripheral lesions we know little or nothing. The first working hypothesis of any value in this field comes to us from Mercier, a disciple of Hughlings Jackson, in a work entitled *The Nervous System*

and the Mind. Mercier's statement is based on a consideration of the processes of generating, storing, and liberating of force in nature, and although not supported by inductive evidence in sufficient quantity to amount to a demonstration, as a theory deduced from general laws it is of great value, especially as it brings what little is known of the conservation and liberation of energy in nerve tissues, into harmony with similar facts in the rest of the organic and inorganic world.

Stated briefly, his argument is as follows:

The storage of force in nerve-cells is effected by nutritive processes; that is, by the appropriation and segregation of materials which, by a rearrangement of their molecules into more stable compounds, liberate energy. The building-up of these complex molecules is going on all the time, while their falling into simpler shapes, with the consequent liberation of energy, is only occasional; so that we have to study here the mode of action of a force constantly accumulating and occasionally discharged. The first question which presents itself is, What causes the discharge; or, rather, when once begun, what causes it to cease? We know that force, like matter, is persistent; that is, it continues in the same way and with the same intensity until altered by some other force; so that the discharge of a nerve-cell, once begun, unless influenced from without, can never stop until the energy of the cell has entirely exhausted itself. As a matter of fact, healthy cells do always stop short of complete exhaustion, and, as a rule, stop at once after the ceasing of the determining cause of their action; and as the doctrine of persistence of force, completely proven to hold throughout both the organic and inorganic worlds, absolutely requires an active force as the cause of this cessation, one has been postulated and called inhibition; and it is Mercier's idea that this is a force constantly exerted by each nerve-centre on the centre just before it in importance, so that the centres are arranged in a hierarchy, each subject to the one just above it.

A moment's consideration will show that the resultant of two opposing forces is not, as might at first glance appear, a single force acting regularly, but is almost invariably a rhythmical motion. Examples of this fact are the motions of the planets in their orbits, as a result of the opposing forces of gravitation and tangential momentum; the swaying of a reed in the wind, as a result of the opposing of the elasticity of the reed to the impact of the air; the rattling up and down of the lid of a tea-kettle, as the result of the opposing actions of the steam within and the weight of the lid. Such examples might be multiplied indefinitely, so as to prove, as Herbert Spencer has shown, that all motion and all progress, moral, mental, and physical, is not uniform but rhythmical, consisting of oscillations on either side of a mean point, which may itself be stationary, but is usually slowly advancing or receding.

In nerve tissues we have to do with two opposing forces, one of which, inhibition, may, for any given time, be regarded as constant; the other, the force within the cell, is ever on the increase, so that the condition of equilibrium within the cell must become more and more unstable until the inhibiting force is overcome, and a discharge is the result. As above pointed out, the discharge is rhythmical, and consists of a succession of puffs or outbursts, which, in the case of a motor ganglion cell, gives rise to successive contractions of the corresponding muscle. Under normal conditions one contraction follows so closely on the other that they are merged, and the muscle does not relax until the discharge ceases. This is the case in health. What will happen if, for any reason, storage occurs much more slowly, or inhibition is much stronger? We see at once, from analogies in nature, that the separate discharges will be more powerful and will take place at longer intervals. If, for instance, the fire under the kettle be gradually diminished, the lid, instead of rattling up and down, will give an occasional vigorous jump; a stiffer reed in a stream of water will vibrate more slowly, but with a wider excursion, than will a slender one.

The epileptic convulsion is the result of a discharge so widespread and intense, that it furnishes possibly the best instance in which to study the opposing forces which are readjusted in every muscular act. The liberation at the beginning of the convulsion is enormous, and as the inhibitory force is at this time little or nothing, the result is a series of discharges which follow each other so rapidly as to be practically merged, and the result is a tetanic contraction of all the muscles. As inhibition increases, the discharges follow each other more and more slowly, until they are no longer completely merged, and a slight tremor begins to be manifest. This tremor becomes coarser as inhibition begins to preponderate, until, finally, after a few tremendous contractions of all of the muscles together, inhibition predominates and the attack ceases. This explanation of the epileptic convulsion is, of course, largely hypothetical, but it illustrates beautifully Mercier's theory, and brings the phenomena of convulsion into harmony with that which has, by physiological methods, been proven in regard to the contraction of a muscle in health. This view of inhibition also explains very well the tremor of fatigue, alcoholism, poisoning by tea and tobacco, in fact, of all conditions in which storage of force is diminished. It is especially applicable to Charcot's view of the characteristic tremor of multiple

sclerosis. It may well be supposed that nerve-fibres deprived of their myeline sheaths and running through sclerosed tissue would have less conductivity than would normal ones; that is, their resistance would be increased, and this would constitute a practically increased inhibition to the wave of nerve force; so that the latter, instead of coming out at rapid intervals, would come in strong and widely separated shocks. There is another view of the causation of tremor in this disease, which ascribes it to the location of sclerosed areas in the brain, and mainly in or about the optic thalami. German observers have pointed out the fact that in cases of multiple sclerosis with the typical tremor, patches of sclerosis are invariably found in this locality, and in no case of purely spinal sclerosis has the typical tremor been present. The case which follows is an example of this, and is one of several which have recently come under the writer's observation:

O. L., forty-seven years of age, married, worker in sewer pipe. The patient was entirely well until he went into the army in 1861. He served about a year, and left on account of lung trouble. He had great pain in the left side of his chest, cough and expectoration. He spat blood twice about nine years ago. This trouble lasted for years. He still coughs a little, but has been much better for the last four years. He has been subject to headaches ever since he left the army; these are in the frontal and occipital regions, and last two or three days. There are usually no eye symptoms, but sometimes in the last few years he thinks he sees spiders and other objects. The headaches are accompanied with much dizziness and vomiting.

The patient had typho-malarial fever eleven years ago, and after that his left arm became very weak, and he thinks he lost feeling in it. The left leg then became weaker. There were some gnawing pains and prickling sensations; no shooting pains. He has had three attacks, the last one six years ago, in which he lost consciousness for a few minutes; became purple in the face; there were no clonic movements, but the hands were tightly clenched. There was no headache afterward, but great weakness for two or three days, and the patient was quite forgetful, so that he entirely lost the three or four days following the attack. The patient was in bed two or three weeks five years ago, with severe pain through the temporal region and in the left chest. The left leg and arm have grown weaker, so that the patient has been unable to be out of bed for the last three years. He has severe pain in the head a large part of the time, worse at times, unrelieved except by morphine. At times the pain has started in the right temporal region and shot into the right eye. The pain feels as if it were deep in the head. The memory is clear, and intellectual faculties as good as ever.

The right eye has lately been removed by Dr. B. L. Millikin, on account of an injury sustained by the patient when a young man.

On examination, the left pupil reacts to light and with accommodation; no paralysis of the external eye-muscles; no deviation of tongue or face. There is marked loss of power in the left arm and leg; fair power in the right arm and leg. Anæsthesia to tactile, painful, and temperature impressions is very marked on the left side, but nowhere absolute. There is no anæsthesia of the face. The knee, triceps, and wrist reflexes are well marked on the right side, and much exaggerated on the left; ankle clonus is marked on the left side, slight on the right. The muscles on the left side are moderately wasted, and this side feels cooler than the other. There is no reaction of degeneration; the muscles all react well and promptly to the induced current. The hearing is fairly acute on the left side, slightly diminished on the right. There is no tremor of the face, nor speech defect. There is a simple tremor of the hands, of voluntary type, not marked. There is no specific history. The patient has three children, all healthy, but one is feeble-minded. There have been, so far as the patient knows, no nervous diseases in his family.

The diagnosis in this case presented some difficulties. The tremor which was noted was a simple tremor, of not sufficient intensity to warrant a diagnosis of multiple sclerosis. At the same time, the very long course of the disease—at least eleven years—was strongly suggestive of a sclerotic process of some kind. A hemi-lesion of the cord was ruled out, from the fact that paralysis and anæsthesia occurred on the same side of the body. Tabes dorsalis was excluded by the absence of ataxia and the presence of knee-jerks; amyotrophic lateral sclerosis by the absence of the reaction of degeneration, and of marked atrophy and fibrillary contractions; so that the indications pointed strongly, by exclusion, to multiple sclerosis, which was the provisional diagnosis made just before the autopsy. A condensed statement of the post-mortem appearance of the central nerve tissues must suffice:

The brain substance appeared normal throughout, except that there was a grayish-looking patch in the left middle peduncle of the pons about the size of a pea, and another in the lower part of the medulla. All through the spinal cord, but especially in the cervical and dorsal portions, there were grayish translucent patches, scattered irregularly, and involving white and gray matter alike. On microscopical examination, these were found to be patches of sclerosis, in which were many naked axis cylinders, as seen in both gold chloride and nigrosine sections. The Weigert stain showed few, if any, normal myeline sheaths in these areas, but occasional drops of disintegrated myeline.

As an obverse of the fact that many cases of multiple sclerosis occur which do not show the characteristic tremor at any part of their course, we have the occurrence of typical tremor, exaggerated reflexes, and other signs of multiple sclerosis, when the autopsy fails to show any lesion whatever. These

cases were first described by Westphal, and are obviously analogous to cases of paralysis agitans; they show with the latter the seeming anomaly presented by a disease, so far as we know, purely functional, yet running a progressive course, and regularly ending in death. The fact that typical symptoms of multiple sclerosis may occur in a case which after death presents no lesion, makes particularly difficult a diagnosis in those cases which have some of the symptoms of multiple sclerosis, and others of paralysis agitans. Such a mixture is presented in the two following cases, the first of which is of probable organic origin, the second probably functional.

M. E., a man, fifty-one years of age. The patient was thrown out of a buggy nine years ago, was unconscious two or three minutes, but made a good recovery without further symptoms. About eight years ago a tremor began in the right hand, which gradually extended to the right leg, and since he had the "grippe," a few months ago, the left hand and leg began to be involved. He has had feelings of soreness and weakness in the extremities, and subjective feelings of heat and cold are very marked. He often wakes in the night and finds himself sweating. When he combs his hair he has a pain over the right eye. The right side of the face was the part injured when he was thrown out of the buggy. He has a good deal of headache over the right eye.

On examination, the right hand is held in the writing position; there is no tremor in it, except during voluntary motion. When he attempts to put his finger on his nose there is marked tremor, coarse in character, and increasing as the action proceeds, until toward the end of the movement the excursion of the hand is very wide and violent. There is a comparatively slight tremor of the same kind in the left hand on voluntary motion. The gait is rather hesitating, stiff, and slow, with the body not much bent forward. The pupils are equal, and react to light. There is no nystagmus, but as the patient follows the finger with his eye there is tremor of the head and in the orbicularis palpebrarum. The deep reflexes are fairly marked in both the upper and the lower extremities. The knee-jerk is stronger on the right than on the left side. There is no ankle clonus. Sensibility is acute in the face and in all four extremities. All of the muscles of the upper extremities react well and promptly to the faradic current, and with the galvanic current CCC > AnCC.

The grasp of the right hand is considerably weaker than is that of the left. The patient, formerly a good whistler, is now unable to whistle, and has a good deal of trouble in managing his food when he eats, the muscles of the mouth being weaker on the right side. The tongue is not deviated on protrusion.

In this case the subjective feelings of heat and cold, the writing position in which the hand is held, and the slow and stiff gait, are, at first sight, strongly suggestive of paralysis agitans. On the other hand, the fact that tremor only occurs during voluntary movement, and, still more, the fact that it is coarse and slow, compared with the finer tremor of shaking palsy, is strongly indicative of a sclerotic lesion. On closer examination, the muscles are not found to be so rigid as is the case in shaking palsy, and the position, although stiff, is not the typical bent posture, as appears in an accurate photograph of the patient in his habitual attitude. We have, therefore, in all probability, to do with a patch, or patches, of sclerosed tissue in the brain, and very likely in the neighborhood of the optic thalamus.

Hydrobromate of hyoscine, given in doses of $\frac{1}{200}$ to $\frac{1}{100}$ of a grain, has had, in this patient, little, if any, effect on the tremor.

The following case is, in most respects, a fairly typical one:

S. G., a woman, seventy-three years of age. The patient, who had always been a strong, hard-working woman, began three years and a half ago to notice a weakness in the third finger of the right hand, and this spread so as to involve the whole hand. Finally, a tremor began in the right hand, and spread gradually to the left hand and to both legs. The patient is

now unable to walk; when she attempts it she starts very slowly, and has a tendency to fall forward. When standing she must support herself by holding to something. The patient always feels hot now; can bear few, if any, bed-clothes on her bed; is very lightly clad, even in winter, and complains constantly of the heat. She has had no headache, no double vision.

On examination, the patient has a marked and rather coarse tremor, affecting all four extremities and the orbicularis oris. The tremor is continuous, easily controlled, so that it ceases during voluntary movement, and has a rhythm, as nearly as can be counted, of two hundred to two hundred and fifty per minute. Muscular power is much lessened; the grasp almost nothing on the right side, weak on the left side. Sensation to tactile and painful impressions is acute all over the body. The triceps and knee reflexes are fairly marked, not exaggerated. Pupils equal and react to light. None of the muscles appear wasted, except the extensor muscles of the right forearm and the small muscles of the right hand; these appear smaller than the corresponding muscles on the left side. The reaction to the faradic current is normal in the muscles of the upper extremities, except in the extensors in the right forearm; here the reaction is either absent, or so slight as to be entirely obscured by the constant tremor. The small hand muscles react well. The position of the body as shown in the photograph, a reproduction of which is given, almost suffices for a diagnosis in this case.

Although the symptoms began with weakness rather than with tremor, and there is marked wasting of one muscle group, the remaining symptoms are so typical that probably no lesion would be discoverable on autopsy, and the case must, therefore, rank as one of paralysis agitans.

A LARGE VAGINAL ENTEROCELE COMPLICATING PREGNANCY AND OBSTRUCTING LABOR.

By BARTON COOKE HIRST, M.D.,
of Philadelphia.

Vaginal hernia, with a vaginal enterocele large enough to cause mechanical difficulties in labor, must be one of the rarest complications in the child-bearing process. Many text-books do not refer to it, and those which do have a perfunctory account as though the writer had no personal experience in the method. For example, in *Müller's Handbuch*, in many respects the most complete work on obstetrics of recent times, the whole subject of hernia as a complication of pregnancy and labor is granted but sixteen lines, and this in a work of 2381 pages. Vaginal hernia is dismissed in a very curt fashion as follows:

"The intestines may be pressed downward between the bladder and uterus through a fissure in the pelvic floor, so that they may be felt between the lateral vaginal and pelvic walls, or until they reach the corresponding labium. So also may the intestines, in the same manner, make their way downward behind the uterus, and between the anus and the genitalia may give rise to the so-called perineal hernia. These ruptures, especially during the exit of the head, may become exceedingly serious by compression of the sac-contents; the early reduction of the hernia is therefore indicated. If this is impossible, and there is danger from pressure by the head, the termination of labor by the forceps is required."

In the Maternity of the University of Pennsylvania I have had recently under my charge the case of vaginal hernia in a pregnant and parturient woman about to be described. Stimulated by this experience, I am engaged in a search through medical literature for similar cases, with the idea, in the near future, of writing a more extensive paper on the subject. I would, therefore, be very much indebted to any fellow-practitioner who would tell me of unpublished cases in his own or others' experience:

Mrs. B., aged forty-three, has been pregnant fifteen times, and has had only three premature deliveries. Her last pregnancy was ten years ago. In this she went to term, and fell into labor without medical attendance. She had been in labor six to eight hours with hard pains, when suddenly a large tumor, "as big as a child's head," was seen protruding from the vulva. Two old women, who were with the patient, superintended the delivery two hours later, pulling the tumor forcibly to one side while the child's head was emerging from the birth-canal. After delivery the tumor disappeared, and the woman was only conscious of its presence, in the following years, a day or two before each menstrual period, when it "came down a little." She menstruated for the last time April 4, 1890. Two months later the protrusion became marked, and began to trouble her. The tumor then increased steadily, she suffered more from it daily, and finally took to her bed on October 20th. She was brought to the University Hospital on November 3d. She was then in a wretched condition.

Her bowels had only operated once in the past three weeks; her pulse was 140; her temperature slightly elevated. She was too weak to stand without assistance, and had an extremely anxious expression, although not at all of a nervous temperament. The urine was very high colored and contained pus. A tumor projected from the vulva covered with vaginal mucous membrane, measuring on its exposed surface 2 inches antero-posteriorly, 1⅛ inches transversely. The projection, she said, had been very much larger two weeks ago, before she went to bed. At first sight it seemed as though the tumor inverted the posterior wall of the vagina, but a closer inspection showed that it sprang from the right side, but pressed the right vaginal wall so far to the left that the vaginal canal was reduced to a small passage running directly behind the symphysis pubis. The cervix was reached with great difficulty—an inch above the symphysis pubis and close to the anterior abdominal wall. The tumor occupied all the space within the pelvic cavity, pressing upon the bladder in front and the rectum behind. The forefinger in the rectum and the thumb in the vagina could grasp the mass distinctly, and were as widely separated as the antero-posterior diameter of the pelvis would allow; they could, however, be approximated until they met, except for the rectal and vaginal walls, partly by slight displacement of the tumor upward, but mainly by compression of its contents. The tumor

had the characteristic feel of a hernia and evidently contained no fluid. The portion of the tumor projecting from the vulva was not resonant, but the impulse on coughing was very distinct. The signs of pregnancy were plain.

A diagnosis of vaginal hernia was made. The bowels were opened for the first time in two weeks by three compound cathartic pills and an ounce of castor oil. By rest in bed, regulation of the diet and bowels, and an irrigation of the bladder, the patient's general condition became quite satisfactory. She was still troubled, however, by constant bearing-down pains, which had commenced early in the pregnancy, and continued incessantly, causing her much suffering. On November 21st (231st day since beginning of last menstruation) the membranes ruptured while the patient was lying quietly in bed. Eight hours later the os was sufficiently dilated to admit two fingers. The woman was then anæsthetized. Passing the whole hand into the vagina and displacing the tumor laterally, I found a presentation of one knee. The corresponding foot was seized and brought to the vulva. The gradual extraction which followed occupied two and one-half hours. As the body descended and the head entered the pelvis, the tumor protruded from the vagina to an enormous extent and distended the right side of the pelvic floor and the perineum. Two assistants pulled the tumor off to the right while I extracted the head quickly, but with great force. The child was alive when born, but deeply asphyxiated. It was revived, but died the next day.

The subsequent course of the case as regards the woman was entirely satisfactory. The puerperium was afebrile and uncomplicated. Two weeks after delivery I examined the patient and made the following entry in my case-book:

Tumor still felt on right side, extending down to the pelvic floor, covered by little more than skin, to the right of the posterior commissure of the vulva. The tumor increases in size as one follows it up in the pelvis until, at the level of the cervix, to the right and behind, it is as large as an orange. It can be displaced upward to a slight extent, but it is impossible to reduce it. The impulse on coughing is plainly to be seen on the right side of the pelvic floor.

The woman was advised to return to the hospital for an operation in case she suffered from the hernia.

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ORIGINAL LECTURES.

ON THE IDENTITY OF SO-CALLED SPECIFIC AND NON-SPECIFIC URETHRITIS.

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GENTLEMEN: We find in this case, as you see, a discharge from the meatus which is purulent or mucopurulent in character. As a pathological product of this character is always indicative of inflammation, it is very evident we have here an inflammation of some portion of the genito-urinary tract; and as the same condition which prevents a continuous flow or discharge of urine from the bladder would naturally prevent a discharge from the meatus, as we find the case here, should it come from any point posterior to the urethra, the natural inference is that in this case the inflammation is located in the urethral canal; and while this may seem a roundabout way of saying that the gentleman has the clap, it is always advisable, in pursuing a scientific study, to take up the subject thoroughly and systematically. We have in this case, in other words, a urethritis; a condition which may perhaps with propriety in every case be termed a gonorrhœa. In this connection, however, I must not neglect to state that the word *gonorrhœa* or *clap* should be used with considerable discretion, inasmuch as to the laity it usually indicates a disease which has been derived by contagion or impure contact.

Two forms of urethritis have been described by many authors, the one being termed *specific* urethritis, which was supposed in every case to be the result of contagion, and to which has also been given the name *true* gonorrhœa; and the other, *simple* or *non-specific* urethritis, to which they regarded the word gonorrhœa or clap inapplicable, and which has sometimes been termed "bastard gonorrhœa."

Before proceeding further, it is perhaps advisable to consider more fully the question of the identity or non-identity of these two so-called forms of urethritis. The chief points or characteristics upon which observers have endeavored to establish the non-identity of so-called specific and non-specific urethritis, I will endeavor to illustrate by the following diagnostic table:

Specific.	*Non-specific.*
1. The result of contagion.	1. Not specific.
2. Disease well pronounced.	2. Mild.
3. Long duration.	3. Short duration.
4. Stubborn to cure.	4. Yields readily to remedies.
5. May be communicated by contact.	5. Not communicated by contact.
6. Discharge contains specific microbe.	6. Discharge does not contain specific microbe.

It is, I believe, principally upon these differential points that certain observers endeavor to establish the dual character of so-called specific and non-specific urethritis. Now, let us see if they are really sufficient to constitute distinct diseases, or whether there is any essential element in one that may not exist or be developed in the other.

In regard to the first differential point, *contagion*, it is undoubtedly true that the discharge from one urethritis may convey the disease to another, while the discharge from another urethritis will not be capable of reproducing itself in another individual by contact. It is, however, in all probability true that the disease containing the contagious element (specific), may and does lose its contagious quality or character in certain stages of its course. In other words, it is probable that even the contagious or so-called specific form of the disease is only so at a certain time, and that during a certain period in its progress it loses its contagious character, when it, of course (as regards the differential point of contagion), becomes identical with the so-called simple

or non-specific urethritis. That this change takes place will be admitted by nearly everybody, but a few will argue that the disease, when this change takes place, is, to all intents and purposes, cured, the gonococcus having been, for instance, destroyed. But such is not the case, for this same condition may even yet be aggravated so that it may return to its original profusely purulent contagious character (wherein the gonococcus may be found). That this is true the clinical experience of every practitioner will indicate, and that it is not so, has never been and cannot be shown. It would, therefore, seem that the contagious character of the so-called specific disease depends rather upon the stage or activity of the inflammation than upon the particular *kind* of inflammation. So much, then, for the behavior of the so-called specific form.

Now, on the other hand, as to the action of the so-called *simple* form of the disease; there is great evidence to show that an inflammation arising from natural causes, or more correctly speaking, without the etiological factor of contagion, and one wherein the pathological product is not at first contagious or capable of reproducing itself by infection (*simple* or *non-specific*), may and does become *contagious* in character. This condition of affairs, I think, we frequently see in inflammations of the conjunctiva. The disease having arisen idiopathically, when developed, remains for a certain time simple or non-contagious, but eventually, if subjected to bad hygienic and therapeutic conditions, becomes aggravated into a purulent disease which is eventually contagious; and to reason by analogy, there is probably no valid reason why a simple inflammation of the urethra may not go through the same course, and by aggravation eventually become contagious in character. This being the case—and it has never been and cannot be proven to the contrary—we have a so-called simple or non-specific or non-contagious urethritis, arising independent of contagion, eventually developed into a so-called specific or contagious urethritis; and we likewise have a specific or contagious urethritis eventually, before the complete disappearance of the discharge, mitigated into a non-contagious or simple urethritis. Hence, this being the case, either form of the disease is susceptible of development into the other so-called form—a fact which must prove conclusively that the deviations in character of the so recognized two forms of the disease are but different stages of, or indicate different degrees of activity of, one and the same disease.

In regard to the second recognized point of distinction between *specific* and *non-specific*, it is no doubt true that the disease developed from contagion is, as a rule, more pronounced or violent in its symptoms than one arising from natural causes independent of the element of infection. But there is nothing about this differential point that can in itself show any essential difference in character between one form of the disease and another, other than that of degree.

In regard to the third and fourth points that are claimed to differentiate the so-called specific and non-specific cases, there is nothing about the *activity* of the disease, its *long duration*, or its *unyielding* character that can in any way indicate an essential difference in character from a mild form of the disease, which is of short duration and yields to treatment, other than that of *degree* (but not of *quality*). These points do not establish a difference in quality any more than a confluent eruption indicates that smallpox is a different disease from varioloid with its scanty, discrete eruption.

In regard to the fifth differential point, there is no doubt, as shown in speaking of the first differential symptom, that one urethritis differs from another as regards its *communicability*, but this, as shown in discussing the first differential symptom, does not necessarily establish the essential difference in quality, inasmuch as the simple may be aggravated into the so-called specific or contagious, and that the contagious, as most everybody must admit, may be so mitigated as to eventually become non-contagious—a condition which only refers to *degree* or *activity*, and not to *quality*.

With reference to the last or sixth differential point, we now come to consider the hobby or pet of the micropathologist, and this brings up a question which has never been settled, as to whether this little atom is the axis upon which the disease revolves or *vice versa*. It is undoubtedly true, as has been known during all ages, that a contagious disease necessarily contains elements of some character, microscopical or otherwise, which do not exist in the non-contagious disease. Certain microscopic bodies, however, have been noted as existing in certain diseases which it has been claimed (not, however, proved) constituted the only essential element of contagion; or which are, in other words, the germs of disease. Not to enter at the present time into a discussion of the subject of bacteriology, it is sufficient to state that something has been discovered in the pathological product or discharge of one urethritis, which it is claimed does not exist in another, and which has been termed the micrococcus gonorrhœæ, gonococcus, etc. The discovery of this element has of late years, especially by the advocates of the germ theory, been the strongest point of argument in favor of the non-identity of the so-called specific and non-specific urethritis, it being claimed by Neisser, Bumm, and certain other investigators that this element was to be found in a contagious gonorrhœa or urethritis, and was not to be found in a non-contagious urethritis. Now, even if this be the case, it would not be sufficient to convince every careful reasoner that the disease in which the element is found was from first to last essentially and entirely distinct from the other. In the first place, I think it cannot be proven that these elements or so-called germs contain exclusively the contagious elements of the disease. In other words, it has never been proven that a simple condition wherein these elements do not exist cannot be aggravated and developed into a condition where they will eventually be found. Further than this, it has never been conclusively shown that these elements are peculiar to, and are to be found only in, a contagious gonorrhœa. Other investigators have found bodies which they claim to be identical, not only in non-contagious inflammations of the mucous membrane, but also in other secretions and fluids of the body.

To sum up: The germ theory fails to establish a distinction between the so-called specific and non-specific urethritis, and as careful reasoning and analogy seem to show conclusively that a mild, non-contagious inflammation may be aggravated and developed into a contagious one, and that a contagious one may become so

mitigated as to eventually become non-contagious in character, I fail to see, like many other observers, any substantial reason why the subject should be complicated by endeavoring to establish the existence of two distinct forms of urethritis, where, in reality, only one disease exists. Every case of the disease I would simply term urethritis or gonorrhœa (for reasons as previously suggested), making, however, very cautious use of the term gonorrhœa.

163 STATE STREET.

MEDICAL PROGRESS.

Prescription for Whooping-cough.—VON GENSER is said to use the following prescription in the treatment of whooping-cough:

℞.—Carbolic acid . . . . 1½ grains.
Rectified spirit . . . . 2 drops.
Tincture of iodine . . . 5 "
Tincture of belladonna . . 10 "
Peppermint water . . . 2 ounces.
Simple sprup . . . . 1 drachm.

To a child of two years a teaspoonful of this mixture may be given every two hours.

Hyperæsthesia of the Larynx.—The *Revue General de Clinique et de Thérapeutique* gives the following treatment of MOURE for those hysterical cases of hyperæsthesia or anæsthesia of the larynx. Internally he prescribes large doses of bromide of potassium for hyperæsthesia, or the sulphate of strychnia to those who have anæsthesia.

Externally he makes application of the following on each side of the larynx:

℞.—Hydrochlorate of cocaine, dissolved in alcohol . . . 2 grains.
Metallic iodine . . . . ½ grain.
Iodide of potassium . . . 1½ grains.
Laudanum . . . . . 15 drops.
Pure glycerin . . . . 1½ ounces.

Or,

℞.—Hydrochlorate of cocaine, dissolved in alcohol . . . 4 grains.
Laudanum . . . . . 15 drops.
Bromide of potassium . . 45 grains.
Pure glycerin . . . . 1 ounce.

Or in other cases morphine may be used in place of the cocaine as follows:

℞.—Hydrochlorate of morphine . 2 grains.
Metallic iodine . . . . ½ grain.
Iodide of potassium . . . 1½ grains.
Pure glycerin . . . . 1 ounce.

Injections for Hypertrophy of the Prostate.—*La Tribune Médicale*, gives the following prescriptions from the practice of KOBNER for the relief of hypertrophy of the prostate:

℞.—Iodide of potassium . . . 45 grains.
Bromide of potassium . . ½ drachm.
Extract of belladonna . . 4 grains.
Water . . . . . 6 ounces.

This is enough for 20 rectal injections. Six drachms of this solution in from two to four ounces of hot water may be employed once or twice a day or the following may be used:

℞.—Iodide of potassium . . . 2½ drachms.
Bromide of potassium . . 2 "
Extract of belladonna . . 8 grains.
Water . . . . . 10 ounces.

Six drachms of this may be injected twice a day into the bowel.

Five to ten drops of pure tincture of iodine may be placed in the liquid if the large intestine will bear it.

Treatment of Whooping-cough.—Löffler recommends the following solution to be used in the treatment of whooping-cough:

℞.—Freshly prepared chloride of silver . . . . . 1½ grains.
Water . . . . . 2 pints.
Hyposulphite of sodium, a saturated solution.

Use by an atomizer, the liquid being directed into the pharynx. Repeat the application every two or three hours. This treatment is both prophylactic and curative.

Treatment of Jaundice.—According to *La Semaine Médicale*, Carreau employs with great success the oil of turpentine in large doses in the treatment of severe jaundice. He believes that its value depends upon its diuretic and hæmostatic properties, and he uses it in all conditions of severe disease, such as in infectious jaundice, bilious fever with hæmoglobinuria, and yellow fever, particularly if anuria and hæmorrhages are present. In grave cases as many as sixty capsules, containing two or three drops, are given in thirty-six hours, the dose being given as frequently as every half hour. Where vomiting prevents their action he administers oil of turpentine hypodermically in the following formula:

℞.—Ozonized oil of turpentine . . 2½ drachms.
Liquid vaseline . . . . 3 ounces.

The following cases are detailed by Carreau as instances in which this treatment was of service. The first of them was that of a woman suffering from severe icterus with profound coma and uræmic convulsions. Three drops of the turpentine were given every half hour for the first few hours, and after that two drops. Simultaneously with the appearance of the peculiar violet odor of the urine, produced by the turpentine, the albuminuria decreased, the coma became less, and soon passed into simple somnolence, so that convalescence was soon established.

The second case was suffering from yellow fever, accompanied by persistent vomiting, and in this instance twenty-three hypodermic injections of oil of turpentine were made in thirty-six hours. The symptoms rapidly ameliorated, and the patient recovered, although he afterward suffered from two abscesses as a result of the injections. In still another case which was suffering from bilious fever with hæmoglobinuria, the administration of the turpentine every hour or hour and a half was without effect, and it was only when three drops were used that the symptoms rapidly ameliorated.

The Treatment of Diphtheria.—Löffler recommends the following gargle in the treatment of diphtheria:

℞.—Carbolic acid . . . . 15 drops.
Alcohol . . . . . 2 ounces.
Distilled water . . . . 5 "

This should be used as a gargle.

In other cases a solution of 1 to 2000 of corrosive sublimate can be used in the same manner, or the following antiseptic mixture, which is not poisonous, may be employed:

℞.—Thymol . . . . . 15 grains.
Alcohol . . . . . 3 ounces.
Water . . . . . 12 "

It is stated that the gargle of corrosive sublimate acts generally more favorably than does that containing carbolic acid.

Treatment of Cancer of the Stomach.—*Journal de Médecine de Paris* states that Dujardin-Beaumetz secures gastric antisepsis in cases of cancer of the stomach by the use of salicylate of bismuth, naphthol, or salol, prescribed in the form of capsules, made as follows:

℞.—Salicylate of bismuth
Calcined magnesium
Bicarbonate of sodium } of each 2½ drachms.

To be made into 30 capsules, or,

℞.—Salicylate of bismuth
Betanaphthol
Charcoal } of each 2½ drachms.

To be made into 30 capsules, or, again,

℞.—Salicylate of bismuth
Salol
Bicarbonate of sodium } of each 2½ drachms.

To be made into 30 capsules.

For the relief of the pain he uses laudanum, or opium pills, or hypodermic injections of morphine associated with atropine, as, for example, in the following prescription:

℞.—Hydrochlorate of morphine . 1½ grains.
Neutral sulphate of atropine . $\frac{1}{10}$ grain.
Sterilized water . . . . 6 drachms.

Twenty or thirty minims of this may be given at a dose.

The objection to this treatment is that the constant use of morphine may produce the morphia habit, but in the majority of instances the disease progresses so rapidly that this danger is not of any importance. The diet should be absolutely vegetable in its character. The stomach should be allowed to rest as much as possible, and the physician endeavor to use such foods as will be digested by the intestine. This is particularly important in view of the fact that in the majority of the cases of cancer there is a diminution in the digestive activity of the gastric juice. When the cancer is at the pylorus, lavage may be practiced, but if it be at the cardiac end of the stomach this measure is not to be resorted to. The solution employed in washing out the stomach should consist of naphthol in the proportion of 1 to 1000.

Prescriptions for Flatulence.—*Journal de Médecine de Paris* gives the following prescriptions for the relief of flatulence:

℞.—Naphthol . . . . . 1 drachm.
Carbonate of magnesium . . 1 "
Powdered charcoal . . . 1 "
Essence of peppermint . . 2 drops.

This is to be divided into 15 powders, and 1 taken at the beginning of each meal.

When the flatulency is accompanied by constipation the following may be used:

℞.—Magnesium . . . . . 1 drachm.
Flowers of sulphur . . . 1 "

To be made into 15 powders, 1 of which is to be taken at each meal.

When diarrhœa accompanies the flatulency:

℞.—Bicarbonate of sodium . . 30 grains.
Prepared chalk . . . . 15 "
Powdered nux vomica . . 3 "

May be made into 10 powders, 1 of which is given with each meal.

In still other cases, where neuralgia of the stomach or true gastralgia accompanies the tympanites.

℞.—Hydrochlorate of cocaine . . 4 grains.
Quinine sulphate . . . 6 drachms.
Cinnamon water . . . 8 ounces.

Distil, and order a tablespoonful every two or three hours.

The Prevention of Ophthalmia Neonatorum.—The *Revue Générale de Clinique et de Thérapeutique* gives the following treatment used by Valenta for the prevention of this dangerous affection of the new-born. After pointing out that Credé's method, that is, the instillation of solutions of nitrate of silver, possesses many dangers, he proposes that we replace this liquid by solutions of permanganate of potash. The solution which he employs is sufficiently concentrated to be of a dark-red color. This is to be applied to the eyelids by means of a cotton tampon, and immediately afterward by the aid of another tampon the conjunctival sac is to be cleansed. These operations should be performed immediately after birth if they are to be successful.

Treatment of Granular Blepharitis by Ethylate of Sodium.—Symons (*Revue Générale Clin. et Thér.*, March, 1891) prefers this treatment to that by nitrate of silver. It is less painful and causes no reaction. The following is the method: He everts the eyelid and anæsthetizes the conjunctiva with cocaine; then he touches the granular surface with a point dipped in the sodium, cleaning off with a cotton tampon any excess of the agent. Finally, to diminish the caustic action of this substance, he advises the addition of several drops of chloroform.

Toxic Action of Exalgine in Large Doses.—Conning Hartley observes, in *Revue Générale Clin. et Thér.*, March, 1891, that, contrary to those who affirm the harmlessness of this substance, he has seen repeated accidents following its use.

Five minutes after the administration of methyl-acetanilide the patient lost consciousness, suffered intense pain, and was unable to speak, from dyspnœa; pallor of the face was intense. He observed an irregular heart-beat and weak pulse, with profuse perspiration. These accidents are those usually thought to accompany syncope.

Abdominal Hernia.—WOLF, in the *Revue Générale de Clinique et de Thérap.* (March, 1891), gives the following conclusions arrived at by Schrede in regard to the radical operation for abdominal hernia. In 165 operations performed by Schrede for the relief of strangulated inguinal, and 69 for strangulated femoral hernia, there were 2 per cent. of deaths, and 29.5 per cent. of certain successes. By the term "certain" is meant that the hernia did not return within one year. These conditions are the most favorable for the success of the operation: ligature of the sac, and as much tissue as possible; extirpation of the latter; suture of the orifice by which the hernia produced itself; finally, division of the inguinal canal. Schrede prefers to use a metallic suture. Extirpation of the sac simplifies the rest of the operation.

Antiseptic Papers.—For application over wounds or bandages antiseptic paper prepared in the following manner is stated by *L'Union Médicale* to be of value:

℞.—Bichloride of mercury . . 2½ drachms.
Pure glycerin . . . . 6 "
Distilled water, which has been boiled and cooled } 1 pint.

Filter-paper is to be impregnated with this solution and applied where needed.

Treatment of Broncho-pneumonia in Children.—According to *L'Union Médicale*, SIMON recommends the following prescription in the early stages of this condition:

℞.—Acetate of ammonium . . 7 grains.
Tincture of aconite . . 15 drops.
Codein . . . . . 2 grains.
Simple syrup . . . . ½ ounce.
Water enough to make . . 3 ounces.

A teaspoonful of this may be given every hour until five or six doses are taken. At the beginning of an attack a mustard plaster or other form of counter-irritation should be applied over the thorax, and after it has acted for one or two hours should be followed by an emollient poultice. It is also well to allow steam from boiling water to pass into the air of the sick-room.

Parasiticide Ointment.—*L'Union Médicale* gives the following ointment for the removal of parasites:

℞.—Salicylic acid . . . . 45 grains.
Borax . . . . . 15 "
Balsam of Peru . . . 30 "
Etherial essence of anise . . 5 drops.
Essence of bergamot . . 20 "
Vaseline . . . . . 6 drachms.

Make into an ointment and apply to the part affected.

Treatment for Coryza.—*Gazette Médicale de Liège* recommends that in acute coryza a small tampon impregnated with the following solution shall be passed into the nares:

℞.—Hydrochlorate of cocaine . 15 grains.
Distilled water . . . 1½ ounces.

This application may be made twice a day, and should be continued for twenty minutes until the pain and congestion of the mucous membrane is relieved. By this means the frontal headache will be removed, and a complete cure may be obtained.

Powders for Indigestion.—*L'Union Médicale* states that DUJARDIN-BEAUMETZ uses the following powder in the treatment of dyspepsia:

℞.—Subnitrate of bismuth
Carbonate of magnesium
Prepared chalk
Phosphate of sodium } of each, 2½ drachms.

This is to be divided into forty powders, and 1 powder taken after each meal.

Treatment of Erythema of the Eyelid.—BROCQ, in the *Revue d'Ophthalmologie*, states that he employs the following ointment in the treatment of erythema and swelling of the eyelids:

℞.—Salicylic acid . . . . 7 grains.
Lactic acid . . . . 7 "
Resorcin . . . . . 10 "
Oxide of zinc . . . . 30 "
Pure vaseline . . . . 5 drachms.

Care should be taken that none of this ointment enters the eye.

In other cases the following ointment may be applied:

℞.—Salicylic acid . . . . 15 grains.
Pyrogallic acid . . . . 30 "
Vaseline . . . . . 15 drachms.

This treatment is to be applied at night, and it may be alternated with that containing resorcin just given.—*L'Union Médicale.*

Ointment for Phthisis.—*L'Union Médicale* states that the following ointment is useful in the treatment of pulmonary phthisis:

℞.—Creasote . . . . . 2½ drachms.
Lanolin
Olive oil } of each, . . . 1½ ounces.
Lard

This ointment is to be applied with friction each night to the thorax, and the absorption of the creasote from the skin will be of value to the patient.

Treatment of Bed-sores.—BILLROTH is stated to apply the following treatment for bed-sores: Upon the appearance of reddening of the skin he applies a lotion of vinegar or lemon-juice. If excoriation is present, he applies nitrate of silver, and protects the part by zinc ointment or soap plasters. Where gangrene comes on, antiseptic compresses are to be applied, the wound being cleaned by the use of chlorine water, or carbolated oil may be used with care as the phenomena of intoxication may appear. Internally, he employs supportive treatment with wine, acids, quinine, and musk.

Current Literature.

SATURDAY, APRIL 18, 1891.

ALBUMINURIA IN RENAL LITHIASIS.

Marboux (*Lyon Médical*, January 25, and February 8, 1891) has noted the existence of albuminuria in subjects afflicted with established gravel, but whose general health is maintained, and who appear to be benefited by a course of mineral waters. Whenever the urine of a patient is found to contain albumin, an explanation of this vice of secretion should be searched for in the following directions:

1. Has the albuminuria any relation to gravel, is it due to a physiological disposition, to a traumatism, to a dyscrasic state engendered by a recent eruptive fever, or to an attack of renal catarrh?

2. Is it the result of a renal inflammation, engendered it may be by lithiasis, but developing alongside and independently of it?

3. Is it intimately connected with a lithiasis, an agglomeration of sediment, a migration of stones, and does it constitute a passing accident consequent upon the renal congestion arising from the injury to the mucous membrane of the canaliculi? In other words, is it, properly speaking, the albuminuria of gravel?

It is a simple thing to distinguish between *traumatic* and *scarlatinal* albuminuria. *Physiological* albuminuria should be suspected when the urine appears to be normal in every respect, and the quantity of albumin very small, especially if the subject is known to be a heavy eater, or if he has been exposed to great muscular fatigue or depressing emotions. This physiological or functional albuminuria is usually transitory and intermittent, and disappears under the influence of the night's rest; the urine is not otherwise modified in its composition, there are no casts, but there is very often an excess of the crystals of the oxalate of lime. *Nervous* albuminuria is extremely rare, and when present is associated with lesions which are not compatible with a state of health. *Catarrhal* or *congestive* albuminuria is of frequent occurrence, especially in gouty individuals. Chronic Bright's disease is likewise a frequent cause of albumin in the urine. It is associated with certain fugitive, and but slightly prominent symptoms, such as troubles of the eyes, the sensation of dead finger, the sensation of cold flashes, the appearance of erratic œdemas, and the commencement of cardiac hypertrophy. Finally, the presence of albumin may be explained by the existence of gravel or renal lithiasis. Lécorché has formed four stages of this affection. The first consists simply in an excess of uric acid, which is noticed only by chemical analysis. A degree more pronounced corresponds to the presence of sand and gravel in the urine; this is the microscopic gravel. A degree more gives rise to small calculi capable of causing the pains of nephritic colic; this is gravel properly speaking. After this comes renal calculi as the last stage of the affection.

The pathogeny of the albuminuria of gravel embraces: 1. Alterations in the blood crasis; 2. Modifications of the pressure and flow of the blood in the renal vessels; 3. Alterations in the renal epithelium. The primary effect of the clogging of the uriniferous tubules is to hinder the excretion of urine, and to determine a renal congestion by pressing upon the vessels in the vicinity. To this interference of the circulation from mechanical obstruction is added an irritation of the epithelium, which is the second cause of the passage of the albumin into the urine. In review, the causes of the condition are mechanical interference with the circulation of the blood, obstruction to the emission of urine, the congesting influence of pain, injury to the mucous membrane, and, finally, alteration of the epithelium.

This albuminuria may be the first symptom of lithiasis, and the red deposit in the urinals will establish the diagnosis. The albuminuria is simply a protestation of the kidney against the foreign bodies which encumber it, injuring the mucous membrane, and irritating the glandular elements. The urine is limpid, contains a little albumin, is generally excessively acid, and in consequence permits a rapid deposit of urid acid. The deposit contains cells and epithelial casts, very rarely hyaline casts. Nephralgia, usually unilateral, is present in these cases, with lumbar weight and muscular twitchings. Nephritic colic may accompany albuminuria in its early stages during its course or in its convalescence.

The mineral waters are of service in these cases, if properly administered. They may be classed thus:

1. Those with a sodium base: sodium bicarbonate; strong (Vichy, Vals); weak (Royat).

2. Those with a calcium base: calcium bicarbonate (Pougues); calcium sulphate (Contrexéville, Vittel).

3. Those with a feeble undetermined mineralization (Evian).

If the albuminuria is physiological, there exists neither indication nor contra-indication to the use of these waters. In the scarlatinal form the sodium bicarbonate waters are contra-indicated. The calcium sulphate water of Contrexéville will be found of service. In advanced Bright's disease all hydromineral treatment should be avoided. In the albuminuria of gravel, where the mucous membrane is irritated and congested by the presence of the foreign bodies, the mineral waters relieve the condition by washing them out of the tissues.

A COMPARATIVE STUDY OF THE EFFECTS PRODUCED BY BULLETS OF LARGE AND SMALL SIZE.

Delorme and Chavasse (*Archiv. de Méd. et de Pharm. Militair.*, Feb., 1891) have recently made an extensive investigation of the effects produced by shots of various sizes fired from equal distances and travelling with the same rapidity. They have found that the difference observed between the actual projectile of the gun of 8 millimetres

(Lebel) and the lead projectile of the gun of 11 millimetres (Gras) lies, for the most part, in the greater force of penetration of the former, in the difficulty of its deformation, and in its smaller diameter. In both balls, especially when they encounter a resisting bone, the damage inflicted increases with the velocity. The shock produced is also increased with the velocity, and according to whether one bone or more be affected, but it is much more marked with the ball of the Gras gun. The explosive effects, in firing at short distance, are identical for the two projectiles. The orifice of cutaneous entrance, which is always associated with loss of substance for the two projectiles, increases with the velocity, but seldom exceeds the diameter of the vulnerating body. The hole of exit of the ball of 8 millimetres is usually as rounded as that of the ball of 11 millimetres. The smaller dimensions of the holes of entrance and exit end of the passage of the smaller ball approach more to the nature of subcutaneous lesions, which is a favorable circumstance for their more easy and rapid cure. Holes of exit of the diametrical dimensions of the index-finger or thumb, produced by either ball, indicates a comminuted fracture with free splinters; but, for the ball of 8 millimetres, a torn hole of exit, admitting the little finger, gives rise to a suspicion of this lesion. The same indications can be furnished by the holes of exit in the clothing. In firing from equal distances, without the zone of the explosive effects, it is found that the types of fractures remain the same for both projectiles; but at distances of from 300 to 800 metres the ball of 8 millimetres produces effects slightly different from those of the larger ball. These differences consist:

1. In a rending of the cortical layer at the point of contact with retrograde projection of the osseous particles in the line of entrance.

2. In the greater propulsion of the small fragments into the medullary canals.

3. In the breaking up and more complete separation of some splinters belonging to the second osseous wall traversed.

4. In the smaller quantity of splinters driven into the canal of exit; the passage through the muscles is clearer.

5. In the extension of the cracks to a smaller distance in the two fragments.

In short, aside from these common secondary differences, the gravity of the fractures produced by the two balls at these distances is almost the same. From 800 to 1200 metres for the ball of 8 millimetres, the comminution is less, the breaking up of the free splinters is not so frequent, the dislocation is less pronounced, and the projection of splinters into the passage of exit is not as considerable. Therefore, these fractures seem to be of less gravity than the others. For distances of over 1200 metres the ball of 8 millimetres appears to produce fractures comparatively more comminuted than the leaden ball of 11 millimetres. Fractures from direct perpedicular contact, which are frequent with the ball of 11 millimetres, become quite exceptional with the ball of 8 millimetres. Tangential contact is most often accompanied by isolated cracks upon the face opposed to contact with a ball of 8 millimetres slightly deformed. In the epiphyses and short bones both balls produce fractures, perforations, etc., of the same type. But here, taking out of consideration the explosive force, the ball of 8 millimetres seems to cause less extended general fissuring, less rending of tissues, a smaller number of splinters, and more numerous simple perforations. In short, the articular lesions made by the Lebel ball are, in general, less comminuted and less grave.

Upon flat bones the lesions are almost comparable, with the sole difference of the relative dimensions in the diameters of the two projectiles. Here still, the ball of 8 millimetres with less velocity produces a retrograde projection of splinters in the muscular passage of exit. In perforations of the skull the direction of the fissures is identical for the two projectiles according to the point struck. The holes of entrance and of exit of the distorted balls of 11 millimetres are relatively larger than those of the ball of 8 millimetres. With similar velocity the ball of 8 millimetres produces upon the bone disorders less grave than those of 11 millimetres. The smaller balls stop more rarely in the tissues than do those of 11 millimetres.

HYDATIO CYST OF THE LIVER. ABLATION OF THE CYSTIC PORTION BY THE ELASTIC LIGATURE.

IN the *Bulletin de l' Académie de Médecine*, January 20, 1891, DUPLAY reports an operation performed by Terrillon for the relief of hydatid cyst of the liver. The patient was a woman, fifty-three years of age, who had always enjoyed good health until forty-seven years of age, when she suffered severely from violent pains in the right hypochondriac region. This painful attack lasted about six months, and was accompanied from time to time by bilious vomiting, but no jaundice. When the pains commenced to decrease, the patient noticed, for the first time, the existence of a tumor below the border of the right false ribs. This was diagnosed as a cyst due to impaction of gall-stones, and she was treated successfully by electricity and by other methods. She consulted Terrillon in 1889. At that time she was subject to painful crises, which occurred every five or six weeks, of more or less violence, lasting some days. There was considerable emaciation and general weakness. An examination revealed a tumor descending about four inches below the margin of the ribs, which was displaced by the respiratory movements. It was undoubtedly connected with the liver. Anteriorly the tumor did not quite reach the median line, while it was impossible to determine the posterior limit. A slight sensation of fluctuation could be elicited. An exploratory puncture revealed a colorless, transparent fluid. Upon the withdrawal of the fluid the size of the tumor was not sensibly diminished, which gave rise to the conclusion that the cyst was multilocular.

An incision for the removal of the tumor was made, about four and a half inches in length, parallel to the border of the right lower ribs. As soon

as the peritoneum was incised the tumor was revealed, more mammelated, and of a less violaceous color than the healthy hepatic surface. The gall-bladder was healthy. The incision was lengthened and the whole cyst of the size of two fists was revealed. A line of demarcation, very distinct, existed between the diseased and healthy tissues of the liver. There was no depression at this point, but the difference lay in the coloration and consistency of the parts. There being no pedicle, ablation of this portion of the liver would be attended with danger of hæmorrhage. After some consideration, it was decided to pass a rubber tube tightly around the cyst, as is done in the case of uterine fibroids, so as to produce an artificial pediculation of the diseased portion of the liver, which was strangled in this manner. It became turbid and violaceous in color, and swelling occurred, which held the ligature firmy *in situ*. The mass was then held in place between the lips of the abdominal wound by means of a suture upon either side. It gradually sloughed off, and was removed on the seventh day. The wound was entirely healed by the thirtieth day.

DIAGNOSIS OF RENAL CALCULUS, AND ITS OPERATIVE TREATMENT.

Nephro-lithotomy, according to James Israel, is intended to remove stone from the kidney before the kidney has suffered irreparable damage from the presence of the foreign body; while nephrotomy is applicable when pyo-nephrosis, atrophy of the kidney from pressure, and inflammatory changes in it, have so altered the kidney that its restoration in complete integrity is impossible. Nephrotomy is among the most frequent of surgical operations upon the kidney, but nephro-lithotomy is, in Germany, still rare. Israel reports a case occurring in a man forty-one years old. The patient had had pain in his left side since his apprenticeship, but from the spring of 1884 the pains became violent and were accompanied occasionally with vomiting, but without colic, so that for two years he was treated for disease of the stomach. Since 1886 the attacks of renal colic became steadily more violent and more frequent. The pain shot into the inguinal canal, to the left knee, and upward to the shoulder. The character of the pain was boring and unbearable, so that the patient had to twist and writhe. In addition to the paroxysms of pain, the patient had a permanent pain in the region of the left kidney. Hæmaturia occurred occasionally; the urine was strongly albuminous. The violent pains occurred nearly every night about one o'clock, so that the patient was unable to remain in bed. There was considerable emaciation and loss of strength. Finally the pain became unbearable, and on January 18th Israel operated with the consent of the patient. The urine before operation contained scattered red blood-cells, though it was clear in color. The constant occurrence of this, or its occurrence after movement, Israel regards as of great diagnostic importance. Palpation detected no enlargement of the kidney, but pressure both in front and behind was painful.

The operation was performed January 18, 1890. An incision was made below the twelfth rib and parallel to it, extending fourteen centimetres forward from the external border of the sacro-lumbalis muscle. The kidney, which was not enlarged, lay surrounded by the several fibrous layers of the fatty capsule. The latter was loosened from the posterior surface as far as the pelvis of the kidney, and, when no stone could be felt there, from the anterior surface also, so that the kidney and its pelvis could be subjected to the most careful digital examination between the thumb and index-finger. As no sign of a stone could be detected by touch, a fine needle was employed to puncture the kidney in a systematic manner. Nothing was detected by the needle. As Israel was certain that stone was present, he determined not to give up the search. Two ways were possible—either to open the pelvis and examine each calyx with a suitable sound, or to divide the parenchyma of the kidney itself, in order to give access to the finger into the pelvis and the calyces. He chose the latter, as injury to the thin wall of the pelvis of the kidney may easily leave behind a urinary fistula. He therefore incised the kidney on its convex border for a distance of two centimetres and deepened the incision to correspond with the entire thickness of the organ until the finger penetrated through the opening into the pelvis and discovered the stone, which was then easily extracted with fine forceps. The profuse bleeding was checked by pressure for five minutes with a wad of cotton, and the wound in the kidney closed by three deep catgut sutures, which stopped the hæmorrhage. When the bleeding from the kidney had ceased, the separated fatty capsule was sewed, and also the belly wall, leaving room for a drainage-tube, which reached to the capsule. The wound healed throughout by primary union. The tube was removed on the eighth day. For the first few days there was pretty severe renal colic. The urine was mixed with blood for eight days, and then became entirely normal and free from albumin. The patient has pain no longer and feels as though born anew.

Israel passes in review the usual symptoms of renal calculus, and shows how inadequate for diagnosis each is, except palpation of the stone, which is only possible in the extremely rare cases of free-lying kidney. The pain, usually regarded as characteristic of renal colic, may be present when there is no stone. Apart from those cases in which too great acidity of the urine, with the excretion of uric acid and oxalate of lime, is sufficient without calculus formation to produce renal colic, Israel says he has seen renal colic in pyelitis, with alkaline fermentation of the urine, when there was profuse throwing off of epithelium from the pelvis of the kidney, intermixed with triple phosphates. He has also seen renal colic in the remittent hydro-nephrosis of movable kidney, when it evidently depended upon a sudden increase of fluid pressure in the pelvis of the kidney, due to temporary complete occlusion of the ureter. There are cases of long-continued and very severe renal colic in which nothing can be found *post-mortem* to explain their cause. In one case in which a patient apparently had severe renal colic

and passed urate of sodium, the cause of the pain was discovered to be a spondylitis of the middle thoracic vertebra.

Another symptom is lessening of the quantity of urine during the attacks, frequent impulse to urinate during them, and evacuation of concentrated urine. This is true of many cases, but it occurs also in painful colic from other causes, such as that from gall-stone and intestinal colic, and it may also be absent in renal colic.

Spontaneous pain in the kidney region in the intervals between attacks is a symptom of renal colic; but it occurs also in cases of beginning tuberculosis and in simple pyelitis.

Changes in the quality of the urine may be wholly absent in renal colic.

The most valuable symptom is the occurrence of blood in the urine; but it is to be considered diagnostic only when it occurs constantly or very frequently where there is no other catarrhal change, and in small quantity—often only detectable by microscopic examination. Admixture of blood in a purulent urine occurs not rarely without stone in pyelo-nephritic or pyo-nephrotic conditions of a simple or tuberculous character. Profuse bleeding at rare intervals is in favor of a tumor of the kidney; but it may occur in renal calculus.

Microliths in the urine prove nothing if present, and are frequently entirely absent.

When the clinical symptoms do not enable the surgeon to decide as to the presence of stone, Israel recommends an extra-peritoneal exploratory incision. Both anterior and posterior surfaces should be felt, the fatty capsule being separated for the purpose. He regards the operation, if done under antiseptic precautions, as free from danger. If nothing can be felt with the thumb and finger, puncture, and, in the event of that failing, incision into the kidney, as described in the case reported, should be tried. Incision into the pelvis of the kidney should be reserved for the cases in which either the stone is felt in the pelvis or is suspected, from the occurrence of sudden anuria, to be in the beginning or upper third of the ureter.

The details of the operation and the subsequent treatment may be gathered from the case reported. At the conclusion of his paper, Israel reports a case in which death followed an exploratory incision into the kidney for supposed stone. Death appears to have resulted from occlusion of the bowel.—*Berliner klin. Wochenschrift*, March 2, 1891.

REVIEWS.

PRINCIPLES OF SURGERY. By NICHOLAS SENN, M.D., Ph.D., Professor of the Principles of Surgery and Surgical Pathology in the Rush Medical College, Chicago, Ill., etc. Philadelphia: F. A. Davis, 1891.

A TREATISE upon the fundamental principles which underlie modern surgery, from the pen of so noted an author as Dr. Senn, will certainly have an unusual interest for the profession. Yet, after a careful perusal of this work, we must confess to a certain amount of disappointment, occasioned not by what the author has written, but rather by that which he has omitted. We had anticipated finding all that was latest and best in antiseptic surgery, together with Dr. Senn's views upon abdominal work, within this volume. But we find that the title should rather read "Principles of Surgical Pathology," for in the preface we observe: "In writing this book it has been my intention to keep in constant view the difference between the cellular processes as we observe them in regeneration and inflammation, and to connect the modern science of bacteriology more intimately with the etiology and pathology of surgical affections than has heretofore been done."

Dr. Senn discusses at length the processes of inflammation, necrosis and suppuration, and the various bacteria which are their causation. Septicæmia, pyæmia, erysipelas, tetanus, hydrophobia, and tuberculosis in all its forms are next considered.

Great care has been taken to make the discussion of each *disease* as full as possible, and the author certainly deserves great credit for the experimental work he has done. The surgeon who is interested in pathology, this volume cannot fail to enlighten, but we fear that the profession in general will desire a treatise devoted rather to the principles underlying the more practical subdivisions of general surgery, than one entirely pathological in its scope.

ÉTUDES SUR LA RAGE ET LA MÉTHODE PASTEUR. Par le DR. LUTAUD, Editor-in-Chief of the *Journal de Médecine de Paris*. Second edition. Paris, 1891.

DR. LUTAUD has in this volume considered very fully the pathology, causation, and treatment of rabies, both previous to and since the introduction of the method of inoculation devised by Pasteur. The opening chapters treat of the different varieties of rabies produced by the bite of the cat, dog, and wolf, together with the mortality statistics. Then follows an account of Pasteur's experiments upon the lower animals, and an exposition of the methods employed in attenuating the virus, with directions as to the mode of administration. In France, during the period from 1850 to 1872 inclusive, Dr. Lutaud finds 685 cases of undoubted hydrophobia reported. Since that time, though no exact statistics are given, he claims that the disease has increased, and especially since the introduction of Pasteur's treatment in 1886. He, however, admits that many of the cases lately reported are exceedingly doubtful. While arguing that the methods of Pasteur are based upon sound principles and have been of inestimable service to the human race, he nevertheless admits that rabies has increased to five times the number of cases reported prior to 1886, with a death-rate of over 13 per cent. The book concludes with detailed statements of the results of the inoculations in Paris and elsewhere, together with the opinions of the profession and secular press as to its utility.

CORRESPONDENCE.

PARIS.

New Method of Treatment of Pulmonary Tuberculosis.

THE appearance or announcement of the discovery of a remedy against tuberculosis, such as in the case of Koch's lymph, and the rather discouraging results

of the same, have encouraged several experimenters to make known to the scientific world various methods applied by them to that terrible disease. In this letter I shall try to review, in as short and concise a manner as possible, the principal methods advanced during the past few weeks.

Some years ago, Prof. Charles Richet, of the Faculty of Medicine of Paris, and Dr. Héricourt, demonstrated that the introduction of a certain quantity of blood obtained from an animal refractory to tuberculosis, such as a dog, to an easily tuberculized animal, would prevent, or, at least, would have a decided slowing action upon the development of tuberculosis in that animal. Two months after the peritoneal injection of the dog's blood into rabbits, with subsequent inoculations, it was found that, of the twenty-four rabbits who had received no blood, eight had died; while of the nineteen transfused animals, two only were dead. It was also found that the transfused animals gained in weight, while the others, the witness animals, lost. In proportion, the normal standard being 100, this would be represented by a gain in the transfused animals amounting to 125, and a loss in the witness, or non-transfused, to 80.

Five months later, however, the above experimenters admitted that the difference between the two lots of transfused and witness animals was equal. It is true that only one transfusion of blood was made, and had this operation been several times repeated it is probable that the results in favor of the transfused animals would have been more noticeable.

Later on, Drs. Héricourt and Richet, in another series of experiments, tried to increase the resisting power of rabbits to tuberculosis, and for this purpose they injected into the transfusion dog a great quantity of very active tubercular virus, about 20 cubic centimetres. For a few days the dog appeared normal, but a month later he looked sick and had lost weight, although his temperature remained normal. At that period 70 cubic centimetres of the dog's blood was transfused into the peritoneal cavity of three rabbits; seven days later these three transfused rabbits and three witnesses were inoculated with an active tubercular virus. Twenty-five days later, two of the witnesses had died and the weight of each rabbit, 100 being taken as the standard, was: for the three transfused animals 99, 108, 101, and for the remaining witness 78.

These favorable results have led Dr. Richet to experiment upon man; he has injected blood-serum obtained from a dog, and aseptically kept in a sealed glass tube, into several patients. Each injection was made in the dose of from 1 to 2 cubic centimetres, which was well borne by the patient. In only one case have there been any unpleasant symptoms, and no untoward results have been observed; moreover, in a therapeutical point of view, these injections appear to be very beneficial to the patients.

The first patient experimented upon presented on physical examination dulness and gurgling râles at the left apex; on the right side a sub-dulness with loud crackling râles and a quite marked congestion of the right apex with fine râles extending to the point of the scapula. Abundant muco-purulent expectoration, night-sweats, and evening temperature. Loss of appetite and marked feebleness.

The injections were begun in the middle of December and continued every two days, the quantity varying from 1 to 1½ cubic centimetres. The patient has greatly gained in strength, has no more night-sweats, has a good appetite, and has gained over five pounds in weight. As to the physical condition: On the right side there are a few sub-crepitant and crackling râles left at the apex; on the left side the gurgling has almost disappeared, and has been replaced by a cavernous respiration, the dulness has diminished in extent, while expectoration has become mucous.

The second history is that of a man fifty years of age, having had tuberculosis for three years. The physical signs indicated sub-dulness at the left apex, mucous râles in the sub-clavicular region, generalized bronchitis of the whole lung. On the right side, dulness under the clavicle, bronchial respiration, prolonged expiration with moist crackling râles. Yellowish thick sputa containing a large number of tubercle bacilli. General condition very bad, extremely feeble, with night-sweats, etc.

The patient received, first, 1 cubic centimetre of dog's serum; six days later, 2 cubic centimetres; and about every six days an equal quantity; the amount having been once, however, 4 cubic centimetres. Six weeks after the beginning of the treatment, after having received 19 cubic centimetres, the condition of the patient was as follows:

The general condition is much better; no more night-sweats; the appetite is good and the patient has increased ten pounds in weight. Cough has greatly diminished, and expectoration has become mucous and much reduced in quantity. On the right side, no more râles; on the left, a few sub-crepitant and sibilant râles at the apex. An important fact was, that a fistula-in-ano, which, before the treatment, suppurated a great deal, now gives a few drops of blood only.

A third case—a man, aged fifty-two years, suffering from laryngeal and pulmonary tuberculosis of two years' duration. The physical examination of the lungs showed on the right side a sub-dulness at the apex with bronchial respiration and fine sub-crepitant râles, the left apex being in the same condition. The larynx, on the other hand, presented a very large epiglottis, much swollen, thickened, immovable, presenting on its surface small ulcerations. In the larynx a gelatinous swelling, especially on the left side, was noticeable. Tubercle bacilli were found in the sputum.

One cubic centimetre of dog's serum was first injected, followed by an injection of 2 cubic centimetres every three days. After twenty days' treatment no great change was found in the lung. On the other hand, the epiglottis had greatly diminished in size, and it was no longer immovable, while the pain, which had been very marked during deglutition, had almost disappeared.

The last case was a man twenty-nine years of age, who presented the same lesions as the preceding patient, the treatment having the same results.

These experiments really deserve to be continued, as they possess the great advantage of not being detrimental to the patient.

Another method of administration of the blood-serum has been employed, and that is *the direct injection* of the serum into the trachea of the patient. On men these injections have proven to be absolutely without

danger. Drs. Saint-Hilaire and Coupard have injected 4 cubic centimetres of the serum from a dog, at six different sittings, into a young man of twenty-two years of age, who suffered from laryngeal and pulmonary tuberculosis, and in no instance have they observed any cough or dyspnœa following. The advantage of this method over the preceding ones is that it enables one to inject much more serum than can be done by the hypodermic method.

Prof. Lépine, from Lyons, uses, instead of dog's serum, goat's serum, as it is claimed that this animal is much less liable than the dog to tuberculosis. Dr. Lépine, however, no longer injects his serum hypodermically, as he formerly did; he now employs the intravenous transfusion, which is done very slowly, and can be easily regulated, provided the reservoir containing the liquid is not elevated too much. In this manner, by the intravenous method the physician can inject *very slowly* from 80 to even 100 cubic centimetres of the serum, and it can be repeated every two or three days.

Goat's serum is preferable to dog's serum for another reason than the one above mentioned, and that is, because it is much less injurious to the human blood-corpuscles than to that from the dog. The same animal can be bled four times in ten days, giving each time 400 grammes of blood. Twice the blood is obtained by opening the external jugular veins and twice by opening the crural veins. After each of the first three bleedings, Dr. Lépine replaces the blood withdrawn by an equal quantity of salt solution of seven per cent. strength. The blood is obtained by means of a glass canula introduced into the vein and is received in a vase placed in cold water and is defibrinated. Dr. Lépine has not yet indicated the results of his experiments by this new method.

Another method was presented at the last meeting of the Society of Biology, by Prof. Picot, of Bordeaux. This practitioner gives hypodermic injections of a liquid composed of sterilized olive oil and vaseline, holding in solution the active principle of creasote, guaicol, and iodoform. This liquid contains 0.01 gramme of iodoform and 0.05 of guaicol in each cubic centimetre. The injections are given in the cellular tissue of the scapular region. These injections produce no general symptoms except occasionally a sweat, which lasts about two hours; no hæmaturia nor albuminuria is produced; nor are there any local symptoms at the point of injection.

A post-mortem examination of three well-advanced cases of tuberculosis who had undergone these injections, indicated a drying-up of the pulmonary cavities, in which no more caseous material or liquid could be found. From a therapeutic point of view, these injections increased the appetite, diminished and even arrested the expectoration, prevented night-sweats, and increased the weight of the body.

In two cases, in which there was a decided pulmonary tuberculosis with cavities, the physical signs of cavity disappeared in one patient, while in the other desiccation of the cavity was manifested by a complete cessation of the râles; while in two other cases of tuberculosis of the second degree, the crackling râles totally disappeared. Fifteen patients have been treated in all, with equally good results. This practitioner declares that this method is an excellent one in the treatment of pleurisy, removing in ten to twelve days very large effusions into the pleural cavity. In a case of double pleurisy the same result was obtained without any external counter-irritation having been used.

The quantity used is from 1 to 3 cubic centimetres daily. When the patient has not reached the very last stage of the disease, marked improvement of the general and local conditions is quickly observed; cough and expectoration are rapidly diminished; the crackling râles disappear; the bacilli in the sputa diminish greatly in number, and the weight of the body greatly increases.

The results which will be obtained by these different methods cannot, of course, be indicated now. Several months of experiments and observation are necessary; for, in a disease like tuberculosis, we have no right to arrive at a hasty conclusion, such as has, unfortunately, been done in the series of experiments with Koch's famous remedy.

NEWS ITEMS.

International American Medical Congress.—Dr. Charles A. L. Reed, of Cincinnati, has indicated his intention to introduce at the meeting of the American Medical Association at Washington resolutions to the following effect, viz.:

1. That the American Medical Association extend an invitation to the profession of the Republics and Colonies of the Western Continent to assemble in this country in an International American Medical Congress.

2. That the Committee on Nominations be instructed to nominate one member for each State and Territory, and one each for the Army, Navy, and Marine-Hospital Service, to constitute a committee, with power to act, to which shall be referred time, place, and permanent organization of the proposed Congress.

There are sound reasons why such a Congress should be held. Learning always follows in the wake of commerce. The development of politico-commercial relations between this country and those of Latin America must be followed by interchange of literature and science. Medicine will be pushed forward by necessities arising out of commerce. Naval hygiene, quarantine, epidemiology, and the relation, through bacteriology, of these to all other departments of medicine, raises a communal interest between the countries of the two Americas on all subjects which could come before a medical Congress. Interests in medical education might be reciprocally conserved by bringing the Anglo-Spanish profession closer together. Dr. Reed's personal correspondence with Central and South America indicates a favorable disposition there toward the proposed Congress.

Obituary.—Dr. Thomas Baird Reed, Attending Surgeon to the Presbyterian Hospital, and Attending Physician to Girard College Hospital, Philadelphia, died, after an illness of three days, on the evening of April 1st. The immediate cause of death was uræmia, an old nephritis having been aggravated by the passage of a renal calculus. Dr. Reed was born in Washington, Pennsylvania, in 1834, and after a good common-school education graduated from Washington College in 1852.

Soon after taking his degree of A. B., Dr. Reed matriculated at Jefferson Medical College, from which institution he received his degree of M.D. in March, 1859. He was immediately thereafter appointed a Resident Physician in the Pennsylvania Hospital, and served in that capacity the full term of one year and six months. Upon leaving the hospital in May, 1861, he was commissioned Major and Surgeon of the Second Pennsylvania Reserves, with which regiment he went to the front, where, for brilliant professional services, as well as for gallant conduct in several important engagements, he was rapidly promoted to the positions of Brigade and Division Surgeon, and finally became Medical Director of the Army of the Potomac. While engaged in military practice Dr. Reed planned and built many large military hospitals in cities where his corps had their base lines. After being mustered out of the army at the close of the war with the brevet of Colonel, he began private practice in Philadelphia. Upon the organization of the Presbyterian Hospital, in 1871, Dr. Reed was elected an Attending Surgeon, and faithfully served this institution in that capacity until the day of his death.

In addition to his private duties, he was, for more than twenty-five years, medical examiner for the Philadelphia office of the Mutual Life Insurance Company of New York. Dr. Reed was a Fellow of the College of Physicians of Philadelphia, a member of the Association of Ex-Resident Physicians of the Pennsylvania Hospital, and of the Military Order of the Loyal Legion.

In his social, as well as professional life, he had hosts of friends, and to the younger members of the medical profession he always willingly gave advice and assistance. His loss is one that will be keenly felt by all those who knew him.

Resolutions on the Death of Dr. T. B. Reed.—At a meeting of the medical staff of the Presbyterian Hospital, held April 6, 1891, the following resolutions were offered and unanimously accepted:

"Inasmuch as it has pleased our Heavenly Father to remove from our midst our personal friend and late colleague, Dr. Thomas B. Reed, it becomes us, his fellow associates in the Presbyterian Hospital, to take some action in recognition of his former position and his valuable personal relations with each one of us, as well as his interested and efficient services to the institution he so loved and served.

"*Therefore be it Resolved*, That in his death this Board has lost one of its most efficient advisers. Endowed with a strong personality, conscientious in the performance of the simplest duty, painstaking, devotedly interested in behalf of any patient submitted to his care, thoroughly equipped by a long experience in the management of hospitals in the army, he brought to bear upon all his professional and hospital duties such qualities as are rarely associated in a single individual.

"*Resolved*, That we tender to his family an expression of our heartfelt sympathy in this their hour of bereavement and trial."

Upon motion it was decided to enter these resolutions upon the minutes of the meeting, to transmit a copy to the family of Dr. Reed and to the Trustees of the Presbyterian Hospital, and to publish them in the Philadelphia medical papers.

Dr. L. S. McMurtry, of Louisville, Kentucky, President of the Southern Surgical and Gynecological Association, delivered two lectures before the Alumni Association of the College of Physicians and Surgeons, Baltimore, at the College Building, cor. Calvert and Saratoga Streets, on Saturday evening, April 11th, at 8 o'clock, and on Monday afternoon, April 13th.

His subject was "The Pathology, Diagnosis, and Treatment of Ectopic Gestation."

Congress of American Physicians and Surgeons.—Preliminary programme of the American Association of Andrology and Syphilology. The following papers have been promised:

"A Review of the Evidence of the Transmission of Syphilis to the Third Generation." By Abner Post, M.D., of Boston.

"Relation of Syphilis to Stricture of the Rectum." By R. W. Taylor, M.D., of New York.

"Surgery of the Ureter." By A. T. Cabot, M.D., of Boston.

"Some Experience with Suprapubic and Perineal Drainage, Temporary and Permanent, in Vesical Disease." By Edward L. Keyes, M.D., of New York.

"Some Cases Illustrating Urinary Retention from Unusual Causes." By Francis S. Watson, M.D., of Boston.

"On the Radical Cure of Urethral Stricture by Restoration of the Mucous Membrane to the Normal Condition." By John P. B. Bryson, M.D., of St. Louis.

"Observations upon the Syphilitic Cachexia." By J. Blake White, M.D., of New York.

"An Obscure Case of Chronic Non-specific Urethritis of Sixteen Years' Standing." By George E. Brewer, M.D., of New York.

"New Methods for the Treatment of Urethral Disease Effected by the Use of the Speculum." By F. Tilden, M.D., of New York.

"Rupture of the Bladder." By A. T. Cabot, M.D., of Boston.

"Encysted Stone, Complicated with Growths of the Bladder." By C. H. Mastin, M.D., of Mobile.

"Short Note on a Case of Urinary Tuberculosis Treated by the (Koch) Subcutaneous Method." By Edward L. Keyes, M.D., of New York.

"On the Use of Salicylic Acid in the Treatment of Certain Forms of Cystitis." By John P. Bryson, M.D., of St. Louis.

"The Dry Poultice in the Treatment of Epididymitis." By George E. Brewer, M.D., of New York.

"Exhibition of an Antiseptic Syringe for Hypodermic Medication." By J. Blake White, M.D., of New York.

"On the Occurrence of Nephritis in Early Syphilis." By J. A. Fordyce, M.D., of New York.

The Prevention of Narcotic Inebriety.—At a meeting of the American Association for the Cure of Inebriety, held February 18th at the Academy of Medicine, New York, Dr. J. B. Mattison, of Brooklyn, offered the following preamble and resolutions:

Whereas, a leading cause of morphinism, chloralism, and cocainism is the facility with which morphine, chloral, and cocaine can be procured from pharmacists; and

Whereas, the refilling of prescriptions containing

these drugs is a potent factor in the rise and growth of these diseases:

Therefore be it Resolved, as the sense of this Association, that no retail druggist should sell morphine, chloral, or cocaine, except on a physician's prescription, and that no prescription containing morphine, chloral, or cocaine should be refilled except on the written order of a physician.

These were unanimously adopted, and a committee consisting of Drs. Mattison, Crothers, and Wright, was appointed to secure legislation in accordance with the resolutions.

Number of Students in the German Universities.—The *Wiener klinische Wochenschrift* states that during the present semester there are the following number of students in each of the Universities of Germany:

Berlin	5527	Freiberg	931
Leipsic	3458	Gottingen	890
Munich	3382	Marburg	855
Wurzburg	1544	Griefswald	773
Tubingen	1250	Konigsberg	680
Breslau	1246	Jena	640
Bonn	1219	Geissen	549
Ehrlingen	1054	Kiel	489
Heidelberg	970	Munster	385
Strasburg	947	Rostock	371

The whole number of students in Germany amounts to 28,762.

A Legal Absurdity.—The following is taken from the *London Medical Recorder*: "A curious case came before the New York City Court last week, with a still more than curious termination. A gentleman discharged a wet-nurse because she went out at night, and on this and other grounds was not satisfactory to him. The nurse brought suit for breach of contract, and asserted that as long as she supplied the infant with good milk, the father had no right to dismiss her. A pair of healthy-looking twins was produced in court as evidence of the superior lactogenetic capacity of the wet-nurse, whatever might be the irregularity of her habits or the delinquencies of her morals. The jury rendered a verdict for the plaintiff, and awarded her the full amount of her salary according to her alleged contract. This may be good law, but it is not good sense, and the decision will certainly discourage the employment of wet-nurses, already a notoriously uncomfortable addition to the family circle. A bottle is much more amenable to reason, and is far less expensive."

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM MARCH 31 TO APRIL 13, 1891.

By direction of the President, the following-named officers are detailed for duty under the Inter-Continental Railway Commission, appointed under a provision in the Act of Congress approved July 14, 1890, for the purpose of making "a preliminary survey for information in respect of a continental railway recommended by the International American Conference," and they will report in person to the Commission in this city accordingly: EDGAR L. STEEVER, *Captain*, Third Cavalry; STEPHEN M. FOOTE, *First Lieutenant*, Fourth Artillery; LYMAN W. V. KENNON, *First Lieutenant*, Sixth Cavalry; ANDREW S. ROWAN, *First Lieutenant*, Ninth Infantry; SAMUEL REBER, *Second Lieutenant*, Fourth Cavalry; and CHARLES A. HEDEKIN, *Second Lieutenant*, Third Cavalry. WILLIAM C. SHANNON, *Captain and Assistant Surgeon*, for duty as Medical Officer of the party to which he may be attached.—Par. 9, *S. O. 73, Headquarters of the Army, A. G. O., Washington*, April 1, 1891.

HUNTINGTON, DAVID L., *Major and Surgeon.*—On being relieved by Henry G. Burton, Captain and Assistant Surgeon, from duty at San Diego Barracks, Cal., will report in person to the commanding officer St. Francis Barracks, St. Augustine, Florida, for duty at that post, reporting by letter to the commanding general Division of the Atlantic.—Par. 5, *S. O. 71, Headquarters of the Army, A. G. O.*, March 30, 1891.

BURTON, HENRY G., *Captain and Assistant Surgeon.*—Now at San Diego, Cal., on sick-leave of absence, is relieved from further duty at Vancouver Barracks, Wash., and will report in person to the commanding officer San Diego Barracks, Cal., for duty at that post, relieving David L. Huntington, Major and Surgeon, and reporting by letter to the commanding general Department of Arizona.—Par. 5, *S. O. 71, Headquarters of the Army, A. G. O.*, March 30, 1891.

By direction of the Acting Secretary of War, JOSEPH B. GIRARD, *Major and Surgeon*, is relieved from duty at Fort Lowell, Arizona Territory, to take effect upon the withdrawal of the troops from that post, and will report in person to the commanding officer, Alcatraz Island, Cal., for duty at that station, reporting by letter to the commanding general Department of California.—Par. 5, *S. O. 70, Headquarters of the Army, A. G. O., Washington*, March 28, 1891.

By direction of the Acting Secretary of War, JOHN VAN R. HOFF, *Captain and Assistant Surgeon*, now in New York City on leave of absence, is assigned to duty as an additional member of the Board of Medical Officers constituted by Par. 18, S. O. 52, March 7, 1891, from this office, to meet in New York City, for the examination of candidates for admission to the Medical Corps of the Army, etc.—Par. 6, *S. O. 78, A. G. O., Washington*, April 7, 1891.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE THREE WEEKS ENDING APRIL 4, 1891.

WYMAN, WALTER, *Surgeon.*—To inspect Delaware Breakwater Quarantine Station, March 27, 1891.

PURVIANCE, GEORGE, *Surgeon.*—Detailed as Chairman of Board of Examiners, April 3, 1891.

SAWTELLE, H. W., *Surgeon.*—To proceed to Rockland, Me., on special duty, March 25, 1891.

GASSAWAY, J. M., *Surgeon.*—Granted leave of absence for five days, April 2, 1891.

GODFREY, JOHN, *Surgeon.*—Detailed as member of Board of Examiners, April 3, 1891.

IRWIN, FAIRFAX, *Surgeon.*—Detailed as Recorder of Board of Examiners, April 3, 1891.

PECKHAM, C. T., *Passed Assistant Surgeon.*—Granted leave of absence for ten days, March 26, 1891.

WASDIN, EUGENE, *Passed Assistant Surgeon.*—Granted leave of absence for thirty days, March 27, 1891.

STIMPSON, W. G., *Assistant Surgeon.*—To proceed to Charleston, S. C., for temporary duty, March 26, 1891.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication, or 250 reprints will be furnished instead of payment, provided request for reprints be noted by author at top of manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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ORIGINAL ARTICLES.

THE TREATMENT OF POSTERIOR DISPLACEMENTS OF THE UTERUS WITH THE UTERO-VAGINAL LIGATURE.[1]

BY H. J. BOLDT, M.D.,
OF NEW YORK CITY.

IN the *Centralblatt für Gynäkologie*, 1888, No. xii. p. 181, Dr. Adrian Schücking, of Pyrmont, calls attention to a new method of treatment by operation for this sometimes so exceedingly unmanageable pathological position.

I will not enter into the various methods of operating employed by different gynecologists. In my opinion, according to the condition present, an operation, if such is to be adopted at all, should be performed which will suit the respective case; we cannot therefore say, with any view to science, "I consider the operation originated by Dr. X. Y. Z. the best for retroflexion." Under certain conditions a simpler operation for this pathological condition seems quite feasible, and such a one, I have no hesitation in confirming positively, has been introduced by Dr. Schücking. We should be conservative in the acceptance of a new operation; but when we have a considerable number of cases which render absolute proof of the utility of a certain operation, then we should have the right to speak a word in its favor and to request those experienced with gynecological work to give it a trial in suitable cases. That this new operation is one deserving such investigation, I hope to be able to demonstrate satisfactorily by citation of the cases thus treated by various operators.

The cases in which this operation is clearly indicated are those posterior displacements in which the uterus is freely movable and yet a pessary will not keep it anteposed, or a pessary will keep the organ anteposed only when it is worn, and the patient desires something done for her so that the support can subsequently be dispensed with.

[1] Read before the Medical Society of the State of New York, February 4, 1891.

Posterior displacements held in malposition by moderate perimetritic adhesions can be treated, after first breaking up the adhesions, by Schultze's or Brandt's method. According to Shücking and Thieme, even cases of prolapsus can be cured by the utero-vaginal ligature. I should, however, want better proof than I have experienced before speaking favorably of it.

The operation is done as follows:

After disinfecting the vagina and the external genitals, with the same care as for an abdominal operation, the bladder and bowels having been previously emptied, the uterus is drawn down as far as possible with a double tenaculum forceps. The cervical canal should be sufficiently dilated and the uterus curetted and washed out with hot water, if necessary. The anterior lip of the portio vaginalis is now grasped and the organ thoroughly anteflexed, making sure that no intestines are in front of it, which can be most readily done by placing the patient in Trendelenberg's position. An assistant draws the uterus gradually downward and to the left. The needle invented by Schücking is now introduced, with the needle *within* the canula. An assistant now pushes the bladder to the left side, and the operator, having anteflexed the uterus and having the corpus pushed to the right by the instrument, with the index-finger of his left hand marks the place where the needle will protrude—which is readily done by feeling the end of the canula. Now the thumb pushes forward the lever, which is screwed on to the needle wire within the canula; this causes the needle to pass through the uterus and

vaginal wall. The carrying thread, with which the needle has been previously armed, is now grasped and pulled out, whilst the needle is drawn back again within the canula by means of the lever. The ligating silk is now drawn through by means of the carrying thread, and the two ends are tied together, when it will be found that the uterus is in a position of anteflexion. A serous agglutination subsequently forms in the lower part of the vesico-uterine space.

A suitable pessary should be introduced after

operation, which ought to be worn about three months. The silk ligature should be removed in from six to ten weeks. A modification of this operation by Thieme seems to me worthy of notice, viz.: instead of bringing the proximal end of the uterine suture out at the os externum, the anterior wall of the portio vaginalis at its vaginal junction is pierced again, and the suture is brought out at that point, the object being, *first*, the prevention of cutting of the suture in the cervix; *second*, placing the uterus more into anteversion instead of flexion.

One of the main dangers in doing this operation is injury to the bladder, which has occurred several times in the hands of various operators, but I am confident that with proper care it can always be avoided. To me it occurred in the first case operated upon; it was due to an instrument whose canula was too weak and to improper technique. In no case of injury to the viscus has any ill consequence followed. I use a block-tin sound to push the bladder to one side. Sometimes bloody tingeing of the urine occurs after the operation, which I think due to slight injury by the sound used to push the bladder to one side, rather than to injury with the needle; in the only case in which it occurred in my hands it disappeared at the second urination. Schücking and Thieme both advise irrigation of the bladder before and after operation with a solution of thymol. Zweifel makes a transverse incision in the anterior vaginal wall, at the point where the needle should pass through, which facilitates that part of the operation. This is corroborated by Schücking, who followed Zweifel's advice.

Altogether 141 patients have been operated upon by this method *without* one serious accident; for the purpose of statistics, however, all are not available. In Schücking's list there are 20 who were operated upon by his original method, viz., leaving in the suture only ten to fourteen days, and no pessary after operation; here there were 8 failures.

Klotz, of Dresden, has operated 22 times without stating the results. It is to be presumed, however, if these had not been satisfactory he would not have done the operation so frequently.

Nine cases operated upon by myself show 2 failures; that is, the uterus is again posterior in 2 cases. This I think also due to the neglect of a pessary after operation.

Of 53 operations done by Schücking according to his present method only 2 failures occurred; Thieme, 14 cases, no failures; Zweifel, 7 cases, no failures; Ruhl, 4 cases, no failures; Debrunner, 12 cases, 4 failures.

Two of the latter's cases cannot be counted as evidence for final result.

I have read the letter of one patient to Dr. Schücking, in which she states that she is now relieved of her former suffering. She had been ill for a number of years, during which time she was in the hands of one of the ablest men in Germany without much improvement.

To Dr. Schücking I hereby express my sincerest thanks for his kindness in showing me the proper technique of his operation and for the statistics of cases.

245 WEST FORTY-SECOND ST.

SO-CALLED LACERATION OF THE PERINEUM.[1]

BY HENRY J. GARRIGUES, A.M., M.D.,
PROFESSOR OF OBSTETRICS IN THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL; CONSULTING OBSTETRICIAN TO THE NEW YORK INFANT ASYLUM; VISITING OBSTETRIC SURGEON TO THE NEW YORK MATERNITY HOSPITAL; GYNECOLOGIST TO ST. MARK'S HOSPITAL, ETC.

ON account of its hidden position between the buttocks, the perineum is little exposed to injury from without. Still, under particular circumstances, wounds of this kind are incurred. Thus, punctured, incised, torn, or contused wounds, which may be extensive enough to cause a complete laceration of the partition between the genitals and the rectum, are occasionally produced by falling down on the upright of a chair, the slat of a fence, or a pitchfork concealed in a haystack, or by sliding down the balusters of a staircase against the boss of the newel-post. Similar lesions are sometimes caused by the goring horn of an infuriated bull, or by rape, especially when there is a marked disproportion between the organs that come in contact.

Of much more frequent occurrence are injuries due to a force coming from within. An acute prolapse of the uterus or the expulsion of a large fibrous polypus may cause such lacerations; but by far the most common cause is childbirth, and that is the kind of laceration to which I shall confine myself in this paper.

In most text-books upon obstetrics and gynecology we find descriptions of laceration of the perineum, which give an entirely erroneous idea of the lesion sustained, and are unfit to form the base of an intelligent conception of the pathological conditions caused by it, and the proper therapeutic measures to be adopted in different cases.

The common way of dividing perineal lacerations takes only the extension of the tear into consideration. Thus, authors distinguish three, four, or five degrees of laceration, according to the extension of the tear—through the fourchette alone, to a point between the vulva and the sphincter ani muscle, to the external circumference of the sphincter, to some point in the expansion of the sphincter, through

[1] Paper read before the New York Academy of Medicine, March 5, 1891.

the whole thickness of the muscle, and more or less up the recto-vaginal septum.[1] In my opinion this doctrine overlooks the most important point.

While it is unnecessary thus to divide a tear between the vulva and the rectum into half a dozen varieties, this elaborate division does not comprise some of the most important lesions of the genital outlet resulting from childbirth. It is due to the deplorable confusion between the entrance of the vulva, *rima pudendi*, and that of the vagina, *introitus vaginæ*, to which I have already called attention in my paper on "The Obstetric Treatment of the Perineum," published in the *American Journal of Obstetrics*, in 1880.

The old authors used the expressions *vulva*, *matrix*, and *uterus* to designate the whole genital canal from the rima pudendi to the fundus uteri, just as the public yet nowadays frequently uses the word womb in this sense. Modern medical authors would never confound the uterus and the vagina, but it is by no means rare, or, rather, it is quite common yet to confound the vulva and the vagina and to speak of the vaginal canal in such a loose way that it gives rise to considerable confusion. Still, the two latter organs are divided by just as distinct a line of demarcation as the two former, the limit between the vulva and the vagina being the hymen or its remnants, just as the vaginal portion with the os forms the limit between the vagina and the uterus. The rima pudendi is a slit in the skin, running in a straight line in an antero-posterior direction from the mons veneris to the fourchette; the entrance to the vagina lies an inch or two deeper, is circular, surrounded by mucous membrane and muscles, and is the seat of the hymen or its remnants. These two openings form two comparatively narrow rings at and near the outlet of the parturient canal, and the upper one is, again, the narrower of the two. These rings are, therefore, the two places where laceration commonly begins during childbirth, and from which it may extend more or less into the neighboring tissues. The upper ring being the narrower of the two, is also more frequently torn.

These two rings differ much from one another in their component parts. The outer or vulvar ring consists of skin, a thin expansion of unstriped muscular fibres called *woman's dartos*, adipose and connective tissue.

The inner or vaginal ring is covered with mucous membrane, and under that lies a collection of muscles and fasciæ which give it greater solidity, allow a considerable dilatation, especially after the softening and new growth of loose connective tissue that takes place during gestation, but which, if the tension becomes too great, may give way. These muscles deserve particular attention, since it is injury to them that constitutes the true cause of the sufferings usually attributed to laceration of the perineum. They form three layers. The superficial layer consists of the bulbo-cavernosus or sphincter vaginæ muscle, the superficial transversus perinæi muscle, and unstriped muscle fibres uniting the two posterior ends of the bulbo-cavernosus muscle. The middle layer is represented by the transversus perinæi profundus muscle and the constrictor vaginæ. The deepest layer is formed by the levator ani muscle.

The *bulbo-cavernosus* muscle receives some fibres from the external sphincter ani, the levator ani, and the superficial transversus perinæi muscles, and others originate from the ischio-perineal ligament and the neighboring tendinous tissue. It is inserted on and near the clitoris. It lies outside of the vulvo-vaginal gland and the vestibulo-vaginal bulb, which it compresses, and is not a very powerful muscle. It surrounds the vaginal ring on the sides, but does not close it in front nor behind, and the name sphincter vaginæ is therefore less appropriate.

The *transversus perinæi superficialis* muscle closes the vaginal ring behind. It is a pair of still weaker muscles, but, going from the inside of the tuberosity of the ischium to the transverse septum of the perineum, bisecting the angle between the bulbo-cavernosus and the sphincter ani externus, intermingling with both, it steadies the perineal body, and helps during parturition in pushing the presenting part of the child forward toward the pubic arch. In many women this muscle takes a more forward course, so that it does not reach the perineal body at all, but is fastened to the outer edge of the bulbo-cavernosus muscle. With such an insertion its function can only be to open the vaginal entrance. The superficial layer of muscles is situated between the superficial perineal fascia and the anterior layer of the deep perineal fascia.

The muscles of the deeper layer are little developed, not clearly separated from one another, and differently described by different anatomists. They are situated between the two layers of the deep perineal fascia.

The *deep transversus perinæi muscle* arises from the ramus of the ischium and goes horizontally to the sides of the vagina, which it helps to steady.

The *constrictor vaginæ muscle* consists of a few fibres which arise from the transverse septum of the perineum and encircle the vaginal entrance as a sphincter.

Thus the deep transversus and the constrictor vaginæ correspond to the superficial transversus and the bulbo-cavernosus of the superficial layer.

Of all the muscles contributing to the formation of the vaginal ring, the *levator ani* is by far the strongest and most important. It forms a horseshoe-

[1] A. Charpentier: Traité pratique des Accouchements. Paris, 1883, vol. ii., p. 223.

shaped muscular expansion, which is open in front, is attached in a wide circumference to the walls of the pelvis and forms a double loop behind the vagina and the rectum. It is generally described as two muscles—the levator ani proper and the coccygeus—but they touch one another with their edges, so that one is a continuation of the other, and they often even coalesce. Under all circumstances they form together a pelvic diaphragm corresponding to that which limits the abdominal cavity above. The levator ani takes its origin from an oblique line on the posterior surface of the body of the pubic bone, from a small circle just in front of the spine of the ischium, and from the tendinous arch, part of the pelvic fascia, extending between these two bony attachments, the pubic portion goes backward and inward, crosses the vagina, to the sides of which it is bound by strong connective-tissue attachments. Its fibres are interwoven with the longitudinal fibres on the lateral aspects of the vagina. Some loops go from side to side between the vagina and the rectum, but the greater part of the muscle goes behind the latter, forming loops without any intermediate tendon. They hug the concavity of the end-curve of the rectum and support it from below. The levator goes in between the external and internal sphincter and intermingles with both of them, as well as with the longitudinal fibres of the rectum.

This muscular expansion is covered above and below with a fascia; above it is the vesico-rectal part of the pelvic fascia; and below it is the anal fascia, part of the deep perineal fascia.

Beside other functions that do not concern us here, it draws the anus forward in the direction of the symphysis, pulls the vagina forward during childbirth, and pushes the child forward, so as to make it turn the pubic arch.

Between the vulvar and vaginal ring behind is the *fossa navicularis*, and between both rings and the rectum is the *perineal body*. After having been entirely neglected until it was described by Henle and Savage, this structure acquired all of a sudden an enormous importance, and was made the "keystone" that supported all the pelvic organs. A great deal has been written about it, and different authors have assigned a very different shape to it, but the study of sagittal sections of the pelvis show that it has a great variety of shapes. Sometimes the whole space between the rectum and the vagina, up to the cervix uteri, forms one triangular surface. In other cases this space is easily distinguishable as an upper narrow and a lower broad part, the latter alone deserving the name of perineal body; but this body appears again with very different forms and differs in extension upward. It may just form a slight swelling, so that the whole sagittal cut becomes nearly club-shaped. Sometimes the whole body lies below the hymen, while in other cases it extends more or less up behind the vagina. The shape is sometimes nearly quadrangular, with one side turned to the skin, one to the rectum, one to the vulva, and one to the vagina. In others it has the shape of the quadrant of a circle; in others again that of the receiver of a retort, the neck of which is formed by the narrow part between the vagina and the rectum. This great diversity of forms is easily understood when we take into consideration the fact that all the parts concerned are made of more or less soft tissue.

The perineal body is composed of the posterior ends of the bulbo-cavernosi muscles, unstriped muscle fibres uniting them behind, fibres belonging to the superficial transversus perinæi muscle, the external and internal sphincteres ani and the levator ani muscles, the ischio-perineal ligament, the posterior part of the superficial and deep perineal fasciæ, the anal fascia and adipose tissue. It is covered below by the skin lying between the anus and the rima pudendi, behind by the rectal mucous membrane, above and in front by the mucous membrane of the vulva and sometimes of the vagina. It has no definite lateral limits, unless we artificially suppose it to be continued to the tuberosity of the ischium. The cutaneous surface is shorter than in man, measuring only one-half to one inch in length, while the distance from the anus to the entrance of the vagina, the true length of the perineal body, is about one and three-fourths inches. According to what has just been said about its upper limit no definite height can be ascribed to it.

Small as this body is, it is of great importance in forming the centre of the whole perineal region, where muscles, fasciæ, and ligaments come together. As they are fastened to the surrounding bones the perineal body becomes the chief support of the pelvic floor. It keeps the vagina and the rectum in their proper relative position. During childbirth it forms a strong barrier against which the child is being pushed from above and pressed forward around the pubic arch by passive and active counterpressure. During this act its power of resistance is often overcome, and a laceration takes place.

Beside the two rings we have called attention to at the outlet of the genital canal, a third ring, formed by the internal and external sphincteres ani muscles, must be considered. Its function is to close the intestinal canal. Examined from the vagina, the anus forms a weak point in the pelvic floor. During childbirth it is pushed and drawn forward, and becomes enormously distended, as does all the surrounding tissue between the coccyx and the vulva.

When the child is pushed against the vaginal ring it may break through to the rectal ring and be born

through the rectum. The rectal ring may either burst or withstand the great tension, and the vulvar ring remain intact. The child may also be born between the rectal and vulvar ring, so that both remain intact, while the vaginal ring above is broken—so-called central perineal rupture.

A modification of this is the condition where first a central rupture forms and then extends into the vulvar ring. Another modification is that in which the central laceration stays incomplete, that is to say, no perforation takes place in the perineum, part of the tissue between the skin and the vagina remaining entire.

While the lesions so far mentioned are rarities, we come now to the most common of all, namely, those cases in which the vaginal ring alone is affected. These tears may be superficial or deep, open or concealed, longitudinal or transverse.

According to Duncan[1] every primipara sustains a laceration of the posterior part of this opening, but my own observations have taught me that this is a mistake. I have notes of cases in which there were tears of the labia, the fossa navicularis, the fourchette, and even the vagina, without any injury to the vaginal entrance. Tears here are, however, common, and may extend more or less upward into the vagina and more or less downward into the fossa navicularis. If they are superficial and only go through the mucous membrane they are of little importance, the severed parts being kept in contact by the deeper, and healing easily.

The deep tear of the vaginal entrance, implicating the levator ani muscle, is usually found backward and outward in the direction of the tuberosity of the ischium, the reason for which is probably that the muscle is caught between this point and the head, while in the median line the intervening rectum and the double fascia that descends in front of it as a continuation of the pelvic fascia, furnish a soft pad which protects the muscle.

Sometimes the muscle snaps in the depth of the tissues, while the mucous membrane, containing more elastic fibres, resists the strain, so that the result is a submucous tear, just as the biceps during a sudden flexion of the arm may burst under the skin. As in rupture of the biceps we can put our fingers in between the two retracted ends of the muscle, so in the rupture of the levator ani we can put one finger into the gap, only with this difference, that the rupture does not extend through the whole width of the muscle. At, and to some variable extent above, the vaginal entrance, we feel a V-shaped break in the ring.

The power working eccentrically, the rupture in the vast majority of cases takes place in a radius; in other words, the ring is broken, and the lesion is a longitudinal rent in the genital canal. Exceptionally, the direction of the rent may be more or less transverse. The most common rent of this last kind is a tear along the base of the insertion of the hymen, whereby this membrane is torn more or less completely loose from its connections. Drs. T. A. Emmet[1] and Matthews Duncan[2] describe also other transverse tears, and the former thinks that this form of lesion is the common one. Admitting the possibility of such a tear by which the whole vaginal ring is sundered from the upper part of the vagina, or a partial tear produced by a transverse fold being caught by the advancing child and torn loose from side to side, in my opinion this is and must be a comparatively rare lesion. When the distinguished American author thinks that it is the common form of injury in childbirth, I am inclined to account for it by the fact that at the time he turned his observation to the tears of the vaginal outlet he had long ago given up obstetric practice. Because we find transverse cicatrices in gynecological patients, we cannot conclude that the fresh tear had the same direction. When a longitudinal rent does not heal by juxtaposition of the torn surfaces, it changes direction, and leaves a transverse line of cicatrization. This, I believe, is the explanation of the two facts with which everybody who is engaged both in obstetrical and gynecological practice will be familiar, namely, that fresh rents examined immediately after delivery nearly always follow the direction of the axis of the parturient canal; and, on the other hand, that transverse cicatrices are exceedingly common in women who seek relief for diseases of the genitals.

A tear involving the levator ani at the vaginal entrance deprives the pelvic structures above of their necessary support. As soon as the patient gets up she has a disagreeable feeling of looseness and bearing-down. In the course of time the vaginal mucous membrane bulges out in front and behind, the bladder sinks down, the uterus is first retroverted, then retroflexed, then it descends, and may finally hang between the legs. The strain on the utero-sacral ligaments, the broad ligaments, and the connective tissue of the pelvis causes pain in the sides of the pelvis, and backache. It interferes with free circulation in the pelvis, causes a sensation of heaviness, and produces hyperplasia of the uterus. The vagina is inverted, and becomes unfit for one of its purposes. The cervix is drawn out to a great length, its lips everted, and, in consequence of friction against the clothes, a large ulceration forms around what seems to be the os, but in reality is a point situated much higher up in the canal.

[1] Matthews Duncan: Papers on the Female Perineum, London, 1879, p. 8.

[1] T. A. Emmet: Trans. Amer. Gyn. Soc., 1885, vol. x. p. 161.
[2] M. Duncan: Loc. cit., p. 24.

The prolapse of the anterior wall of the vagina is commonly called cystocele—a correct name, since the bladder always forms part of the swelling. The prolapse of the posterior wall is commonly called rectocele, which is not correct. The rectum nearly always stays in its normal place, and the vagina slides away from it. It is easy to satisfy oneself on this point by seizing the prolapse between the index-finger and the thumb. If it contained the rectum, two slips would be felt when the seized tissues slip out between the fingers: one representing the rectal wall, and the other the vaginal wall; but we feel only the latter. The reason of this difference is, that the bladder is bound to the upper part of the vagina and the cervix with short, tight connective-tissue, while that connecting the posterior wall with the rectum is much looser.

It is possible that the anal ring alone may be broken. Dr. T. A. Emmet[1] has reported a case of this kind in which the rupture had taken place behind, leaving the vulvar ring uninjured, and since nothing is said about the vaginal entrance, it is probable that that also had escaped.

The vulvar ring may be broken, and that is the lesion that has been earliest recognized, and which yet forms the base of most desciptions of lacerations of the perineum. The many classes into which this tear has been subdivided are superfluous. The only question of importance is whether the vulvar ring alone is implicated, or the tear extends through the anal ring—so-called incomplete and complete laceration of the perineum.

The injury commonly takes place in the median line, beginning at the posterior commissure and extending more or less backward. But if the perineum escapes, or only suffers little, especially if the accoucheur helps to press the head forward against the symphysis, the injury to the distended vulva often takes the shape of superficial tears on the labia majora, or deeper tears in the labia minora and the vestibule, near the clitoris.

Nearly all these tears have a longitudinal direction, more or less parallel to the axis of the parturient canal, or at right angles to the rima pudendi, but if the severed halves of the perineum do not unite by first intention, they heal separately, each forming one-half of the cicatrix, in which way cicatrices with a transverse direction are formed. By involution taking place in the vulva after the enormous distention during childbirth the direction of cicatrices is also changed. I have seen real transverse tears by which a strip of mucous membrane extending from one side to the other of the rima pudendi, is torn loose from the fossa navicularis, and tears of the labia majora parallel to the rima pudendi, but such lesions are exceedingly rare compared with longitudinal tears.

The consequences of tears limited to the vulvar ring are slight or none. Most women are little concerned about an affection which does not cause them any discomfort, but the male may find less satisfaction in sexual intercourse on account of the enlargement of the vulva, and sometimes there is a tenderness of the scar which causes the woman pain.

In a complete superficial tear both the vulvar and the anal ring are broken and form a single instead of a double ring; the sphincter retracts, its ends being plainly marked by a little glazed pit on either side; where the perineal body should be is seen a V-shaped cleft; the mucous membrane of the rectum rolls out, forming a little red, soft, puckered cushion at the posterior circumference of the anal opening; and the patient has no control over flatus and fæces, which escape involuntarily, and make the poor woman an object of disgust to herself and others. But if the vaginal ring is intact she has none of the symptoms appertaining to prolapse, which we have referred to in speaking of the rupture of that aperture.

I recently operated on an elderly lady who had had for twenty years a tear through the perineal body, extending one inch and a quarter up the rectum, but where the vaginal ring had not suffered at all. The sphincter ani could be felt as a thick resistant ring without a break, and there was neither cystocele, rectocele, nor the slightest descent of the uterus, nor any symptom of pelvic trouble whatever.

Just as the tear in the vulvar ring may be combined with that of the anal ring, we may have a combination of the vulvar and vaginal rupture, or of all three, the result as to symptoms being a combination of those characteristic of the single tears.

In regard to treatment I shall limit myself to some general remarks.

The preventive treatment lies without the scope of this paper, and has been considered at length in my earlier paper, referred to above.

Under lucky circumstances Nature can, perhaps, effect a cure of any tear. I have myself seen this in incomplete laceration, where the whole perineal body was severed to the rectum; and by a cure I mean agglutination of the entire torn triangular surfaces.

During my services at the Maternity Hospital in the years 1885–86, I examined numerous primiparæ shortly after delivery, and again before they left the hospital, and took detailed notes of the tears of the parturient canal at the two periods. Thus, I satisfied myself that, with few exceptions, the tears in the fossa navicularis, on the labia, through the

[1] Trans. Amer. Gyn. Soc., 1883, vol. viii. p. 202.

vaginal ring, and in the vagina, healed so as to form linear cicatrices. In all the observed cases there was no, or only a very slight, tear of the cutaneous perineum, since all longer tears are immediately stitched, and therefore cannot be examined, and all the patients were treated with my occlusion bandage,[1] which exercises a certain pressure on the external genitals.

Similar results are claimed to have been observed in cases in which the tear extended so far up the rectum that all three rings must have been broken. But as natural cures in such cases are little short of miraculous, no man in his senses would wait for them. As a rule, Nature effects only a partial healing; the parts heal, of course, in the end, but the ultimate condition is far from being identical with the pristine one. With few exceptions we do not get a healing *together*, that is an adaptation and coalescence of the torn surfaces, but a healing *over*, that is to say, a torn surface forms an independent scar, and does not grow together with the corresponding surface on the other side.

The first paper I ever heard read in this Academy was one by Noeggerath on the primary operation for lacerated perineum. Then he stood alone, every speaker either declaring that perineal laceration was so rare that he never saw it, or deprecating immediate interference. All this has entirely changed since then. We all know that, to those who look for them, perineal lacerations are very common, and the many members of the American Gynecological Society who have written on the subject unanimously recommend the so-called primary operation, which means the insertion of sutures, so as to bring the torn surfaces together, immediately after or at least within twenty-four hours after delivery. Immediately after the tear has taken place the torn surfaces fit exactly to one another, and grow much more easily together than pared surfaces. A much smaller number of sutures are, therefore, required. Secondly, if only a partial success should be obtained, the great point is gained that the parts retain their normal shape and relations, so that a secondary operation becomes easier and has greater chances of being successful.

If the vulvar ring is torn behind, alone or conjointly with the vaginal ring, perineal sutures alone, and only from one to three in number, are required. If the anal ring is broken, too, it is best to insert a triangular row of sutures, following the outlines of the triangles which immediately after childbirth represent the perineal body. If the tear extends higher up into the vagina, vaginal sutures alone are placed in the septum above the perineal body. Tears through the anal ring are united with at least two rectal sutures, so as to bring the whole breadth of the torn ends of the sphincter well together. The central perineal rupture is brought together with deep perineal sutures. If the rima pudendi and the skin perineum are intact, there is, as stated above, great prospect of the parts uniting under the comparatively aseptic condition and the pressure ensured by a well-adapted perineal dressing.

Where no lesion is visible on the outer surface the friends of the patient may object to an operative interference the importance of which they do not understand. When circumstances are favorable some deep sutures may, however, be inserted from the vagina in such a way as to bring the edges of the rent in the vaginal ring together. The subcutaneous tear of the levator ani muscle might be treated in a similar way after cutting down upon it, but such an undertaking would probably meet with still greater opposition, not only from the public, but also from the profession. This accident is, therefore, left until bad consequences develop, and is then remedied by the secondary operation.

As I invariably stitch up tears involving the cutaneous part of the perineum immediately, and they always grow together under my antiseptic dressing, I have little personal experience with the so-called *intermediate operation*, which consists in attempting union at any time while the torn surfaces are granulating. I have, however, notes of a case occurring in September, 1882, before the new treatment was introduced into the Maternity Hospital, in which there was a tear through the whole perineum into the rectum, with incontinence of fæces. Three silk sutures were put in at the time of delivery, but no union took place. On the thirteenth day after confinement the granulating surfaces were scraped, dusted with iodoform, and brought together with three stitches, which led to a complete restoration of the perineal body. If, therefore, the primary operation has not been performed or has failed, and the case comes under observation in time, it is well worth while trying the intermediate operation.

If the torn parts have not been united by this or the primary operation, secondary operations are often required. There is a great variety of them, but the time allotted to me being spent, it is impossible to enter on a criticism of their respective values. I will only state which methods I prefer, because they have given me the best results. For incomplete perineal laceration, where the vaginal ring has not sustained much injury, Tait's flap operation is sufficient, and is an easy and expeditious operation, which with proper antiseptic precautions can hardly fail. For cystocele I use Sims's or Stolz's operations; for prolapse of the posterior vaginal wall, with or without rectocele, Hegar's colpo-perineorrhaphy, with slight modifications of my own, has

[1] Garrigues' Practical Guide in Antiseptic Midwifery; Detroit, Mich., 1886, p. 27.

given me most satisfactory results; and for the complete perineal laceration the same author's modification of the operation built up by many predecessors, using a trianglar row of sutures, has yielded excellent results at my hands.

TREATMENT OF THE UTERINE CAVITY IN ABORTIONS.[1]

BY H. C. CROWELL, M.D,
OF KANSAS CITY, MO.

THOUGH the treatment of abortion is quite familiar to most practitioners, viewing it from their individual standpoint, it has appeared to me that there is yet room for discussion of some of the indications in such cases. In view of such a conclusion, as a result of some personal observation, I have undertaken to consider, briefly, certain indications which seem to me to be of practical importance, looking toward the most perfect result.

We will note primarily the physiological state of an impregnated uterus, and then the pathological, as I am disposed to consider it, in case of abortion. Then let us follow with some observation on the treatment as usually practised, noting some of the common results. Thus, considering the subject together I think that we may hope for new ideas and suggestions which may be of assistance to us in like cases.

It is not my intention to consider in detail the management of cases of abortion, but only that stage which comprehends the management of the uterine cavity following abortions. I realize full well that many very excellent authorities will not agree with me on every point, but in principle or theory I think there can be no variance, with our present understanding of processes and sequences. Since there *is* a possibility of difference of opinion, the object of this paper will be attained if it serves to awaken local observation and investigation, which will be of use to us now or in the near future.

The significance of abortions consist in their immediate and, more or less, remote effect upon the subject aborting. The immediate dangers are traumatism and hæmorrhage, either of the cervix or endometrium. The remote danger lies in resulting *endometritis*, *salpingitis*, *oöphoritis*, *sepsis*, pelvic inflammation, and sometimes pelvic abscess.

Martin says, and this is also in accordance with my own observation: "Chronic metritis occurs extraordinarily often after abortions, not only because the women do not take suitable care of themselves, since they (and some doctors) think that a pregnancy which is interrupted too early does not require the same attention as one that ends normally, but especially because this premature interruption of pregnancy is very frequently associated with insufficient evacuation of the cavity of the uterus, and permanent disturbance of the functions of the mucous membrane." Now, realizing the possibilities in a given case of abortion, it becomes evident that we should fully understand the process Nature requires to be fulfilled, and how the result is accomplished, and how we may best render assistance when it is required. We should also understand when Nature is able to effect the various steps necessary to a safe and perfect result.

By an abortion, then, we mean an expulsion of the contents of an impregnated uterus any time within the period of the first three or four months of impregnation. After this period, or during the fourth, fifth, sixth and seventh months, should such expulsion take place, we term it a miscarriage, and after the seventh month to full term it is called premature labor.

Now, in order that we may grasp the significance of abortion, as I have said, it will be necessary for us to familiarize ourselves with the physiological condition of the uterus after the ovum shall have entered its cavity, and, having done that, we can readily see the processes to be performed when, from any cause, the ovum shall be separated and expelled. It has been shown that the uterine mucosa, in way of preparation for the reception of the ovum, is thickened about ten-fold, becomes more vascular, and is thrown into numerous folds or convolutions, due to the increase of the cellular elements, this producing a soft, pulpy bed for the reception of the ovum. This soft, thick mucous membrane is known as the decidua vera. In this decidua vera lodges the ovum, and the surface under the ovum, made up of the decidua vera, is now known as the decidua serotina, and is the beginning of the *placenta*. Folds of the decidua vera grow up around the ovum, and finally meet and enclose it in a cavity of its own, shut off from the general cavity of the uterus. These folds of the decidua vera now become known as the decidua reflexa. During the first two months the fœtus is surrounded by a shaggy enveloping membrane, through which it draws its nourishment. At the end of this time this villous membrane becomes bald in its outer aspect down to the third of its surface, which lies most intimately attached to the uterine mucosa, and is now to be the placenta. Thus we see that a formed placenta does not exist until about the third month, or the termination of the period in which we may have an abortion.

The fœtal membrane or chorion is intimately applied to the maternal or decidual membrane. The decidua vera is not shed and expelled naturally in every case, until the term of gestation shall have expired, at which time it is thrown off by a very

[1] Read before the Kansas City Academy of Medicine.

moderate degree of contraction of the uterus, without much hæmorrhage (except when the placenta is attached) this constituting complete gestation and parturition. Now that the office of the decidua has been fulfilled, at full-term delivery, a new membrane is developed underneath, ready to supply the place of the old to be exfoliated, and this protects the intra-uterine muscles.

With this brief physiological examination of the processes taking place in the uterine mucous membrane during gestation, and especially in the early stages, we must be impressed with the fact that Nature has placed in the uterus a thickened membrane with certain offices to perform, requiring for their perfection the period of nine months, or a normal gestation; hence, whenever we have an abortion, from any cause whatever, we have a pathological condition to treat, and in this no more than in any other pathological condition can we leave it to Nature in every case; nor, on the other hand, can we profitably do that which shall defeat a natural or philosophical process. We must be impressed, it seems to me, that the treatment should be almost unanimous, or having the same end in view, viz.: the removal of the decidua, maintenance of perfect asepsis, and drainage. Now, when we shall have so treated a case as to fulfil these indications, we shall have done all that can be done in averting conditions of sepsis which are attended with serious results to the patients, in the shape of septic endometritis, metritis, salpingitis, abscess, etc.

Let us examine now some of the more common methods of treatment employed, and note the result in not a few cases. Perhaps the most orthodox plan of treatment in the majority of instances is, if the fœtus is expelled, to give ergot and retire. If the cervix is partially dilated, with the membranes protruding, ergot is given to expel them. If the cervix is not dilated, and an abortion is imminent, a tampon is used, if anything is done. When the fœtus is expelled a finger is introduced, and the clots and some of the membranes which are loose are cleaned away. A possible vaginal douche completes the antisepsis of the case. The patient gets ergot, and possibly quinine, for a few days until she recovers or develops a septicæmia, which sometimes receives the proper care and saves the patient; or she may go on and die, as do not a few every year.

Now let us see if there are not certain indications to be met in every case of evacuation of the uterus before the fourth month. We have seen the uterine mucosa developed into a thickened protective or receptacle, so to speak, destined to do a certain work for a certain period, viz., for nine months time, then to be exfoliated, being supplanted by a submucous membrane destined to replace the decidua. Such, however, is not the case in these earlier months, and yet a process of disintegration and shedding must take place, and a new membrane follow. This disintegration consists of a fatty degeneration, a dissolution and discharge, called the lochia. If, then, the uterine cavity is to be freed of its membrane, which has by the separation of the ovum been in a greater or less degree injured, we see as a first consideration the necessity of free drainage; hence we conclude that ergot, which causes uterine contractions and closure of the cervical canal, is contra-indicated. To me the rational plan would seem to consist in cleaning out the uterine cavity of all its contents at once—membranes of the embryo and decidual membrane of the uterus—thus removing the possible cause of sepsis, checking hæmorrhage, and facilitating early involution and a safe convalescence.

By the use of the dull curette, the os being freely dilated, the uterus should be cleaned perfectly, then swabbed out with pure carbolic acid or tincture of iodine, and ample drainage maintained by some means—my own preference being for iodoform gauze—leaving it in place for twenty-four or thirty-six hours, to be replaced after an intra-uterine douche of bichloride. Small doses of ergot and quinine, and possibly iron, may then be given to assist in the process of involution. I am convinced that when left to themselves these cases not infrequently, even when credited with making an unusually good recovery, go on to a state of ill health, though without symptoms which alarm or disturb the patient sufficiently to cause her to consult a physician. Perhaps the larger part of all cases of chronic tubal troubles date their bad feelings to the time of a previous abortion.

Miscarriage, or even parturition, may figure, as do these cases of abortion, in originating an endometritis, which travels up through the tubes to the ovaries, setting up a salpingitis, peri-oöphoritis, or peritonitis, with all their attending ills. One of these cases may run an insidious course without developing any *well-marked* pelvic peritonitis, and present a history something like this: Trouble with lower bowel, rectum, bladder, menstrual disorders, soreness, with indefinite pains, tenderness on palpation, etc. Colicky pains are common if salpingitis is present. These pains are sudden and lancinating, in the region of the tubes, or possibly in the hypogastrium; sometimes suddenly ceasing, followed by a discharge of more or less bloody, serous, or purulent material from the uterus, often thought by the patient to be leucorrhœal. These pains are not infrequently thought to be colic of the uterus; but with this history, if a vaginal examination is made, a small tumor will frequently be found on one or both sides. This same process of inflammation continues, and finally glues the fimbrated extremi-

ties together, causing sterility. Again, no appreciable amount of fluid may be contained in the tubes, and yet the inflammation may have caused a thickening of the coats of the tube (interstitial salpingitis), which can be detected through the vagina as a sore cord. These conditions are amenable to no other treatment, in by far the majority of cases, save the removal of the uterine appendages, which renders the woman incapable of performing her mission in its fullest capacity as a childbearing woman. Hence we see the very imperative demand for such prophylactic measures as shall forestall such disastrous results, which are obtained by antiseptic conditions of the uterine cavity at all timcs, and especially in cases of abortion, by rapid dilatation with steel dilators (not by tents), a thorough, carefully executed curretting, followed by systematic drainage until the uterine cavity shall have assumed a normal condition capable of taking care of itself.

Since writing this paper I have noticed a paper by Winter, of Berlin, in which, after analyzing 100 cases, he arrives at the conclusion that "the decidua vera can be left undisturbed—only loose shreds should be removed—as but nine patients completely shed the decidua; hence I feel warranted in assuming that safety to the patient demands the careful use of the curette to examine the uterine cavity, and if any decidual shreds remain (as I am confident they do in by far the greater percentage of cases) remove them. I consider the curette safer than the finger, and more effective. The results of retained decidual membranes may not be observed at once, but even at the end of one, two, or more years its effects will be noted upon the ovaries and tubes."

Finally, the conclusions at which I arrive may be summarized as follows, viz.:

1st. An abortion is a pathological process, involving the premature expulsion of the fœtus and membranes from the uterine cavity, which, normally, have an existence of nine months before they shall have completed their physiological intention.

2d. That such expulsion is generally incomplete when left to Nature, thus exposing the patient to subsequent pathological conditions or possibly death.

3d. That every case should receive a careful examination by the use of the blunt currette in preference to the finger, as it is safe, easier of introduction, and more effective.

4th. Complete removal of all membranes, maternal and fœtal, offers the greatest protection and safety to the patient.

5th. Perfect asepsis and drainage is a necessary supplement to the curette.

6th. Ergot has little or no effect in the treatment of cases of abortion. If used at all it should be in the late stages to assist involution.

PREVENTIVE MEDICINE AMONG THE WORKING CLASSES.*

BY H. N. HALL, A.M., PH.D., M.D.,
OF CHICAGO

REALIZING that comparatively little is known by the American medical profession concerning the masses of poor foreigners who form so large a portion of our population, I feel that it might be interesting to look over a year's work among these people and the results obtained. It will be of special interest, inasmuch as the practice has been largely confined to the lower and poorer classes, who have apparently never sought a physician unless seriously ill, and then, in the majority of cases, consulting some native of their own country who has "come over" here and prefixed "Dr." to his name. We all know that the Government provides a service for the army and navy; that city governments provide a similar service for their police and firemen; while the railroads assess their employés in order that they may reap the benefits to be derived from this source; but it was not until last January that the attention of the manufacturer was called to this important matter.

In the fall of 1889, Mr. R. T. Crane, President of the Crane Company of Chicago, conceived the idea, in a charitable sense, of employing a physician and surgeon on a salary, to care for the 2000 to 3000 employés of his company, and on January 1, 1890, the service was inaugurated.

The following table will show the number of cases treated each month:

	Number of cases.	New cases.	Cases improved.	Cases same.	Chronic cases.	Sick men off.	Cases off.	Surgical cases.	
								Number of cases.	New cases.
Jan.	2041	1216	771	24	30	.....	58	159	82
Feb.	1325	695	585	23	22	263	8	136	54
March	1332	673	544	13	12	234	2	216	98
April	1310	834	355	16	5	124	...	379	89
May	1201	771	416	7	7	88	3	438	81
June	1391	905	471	2	7	117	14	525	117
July	1352	839	512	6	9	55	4	475	94
Aug.	1423	1107	304	4	8	28	...	531	106
Sept.	1648	851	782	3	5	46	1	654	129
Oct.	2055	1147	899	4	5	33	1	920	138
Nov.	1686	1117	563	5	2	38	2	729	140
Dec.	1927	1353	573	5	6	29	1	706	108
Total	18,691	11,508	6775	112	119	1055	94	5868	1236

Again, if we make quarterly enumerations in order that we may learn that period at which any one condition has been prevalent, we have the following:

	Jan., Feb., March.	April, May, June.	July, Aug. Sept.	Oct. Nov. Dec.	Totals.
Surgical cases	234	287	329	386	1236
Strains and sprains	57	197	181	133	568
Anæmia	34	44	27	52	157
Abscess	3	2	2	21	28
Amenorrhœa	5	21	2	24	52
Brass poisoning	5	31	...	12	48
Bronchitis	260	189	321	440	1110
Biliousness	136	221	282	321	960
Carbuncle	1	...	...	7	8
Catarrh	13	16	11	40	80
Constipation	130	196	189	236	751
Consumption	18	19	1	15	53
Diarrhœa and dysentery	166	206	447	163	928
Dysmenorrhœa	7	6	3	40	56
Dyspepsia	69	148	298	258	773
Dropsy	...	...	2	12	14
Diseases of blood	11	45	19	43	118
" " ear	7	6	8	11	32
" " eye	18	31	46	72	167
" " heart	13	11	11	22	57
" " kidney	26	32	35	36	129
" " nose	...	...	2	2	4
" " skin	40	73	66	105	284
Epilepsy	...	...	3	3	6
Erysipelas	1	5	...	9	15
Faruncle	9	22	34	87	152
Felon	4	2	...	13	19
Goitre	...	...	...	7	7
Heat apoplexy	...	71	36	4	111
Headaches (female)	91	83	32	...	206
Influenza	927	101	...	170	1200
Lead poisoning	1	...	...	3	4
Lumbago	2	12	1	49	64
Malaria	38	53	121	142	354
Nervous diseases	11	5	...	...	16
Neuralgia	11	53	64	72	200
Paralysis	...	...	1	1	2
Piles	8	26	32	24	90
Pneumonitis	13	25	14	32	84
Pleurisy	...	13	6	6	25
Rheumatism	55	62	68	120	305
Rupture	3	6	11	17	37
Sarcocele	2	3	3	10	18
Sciatica	2	4	...	6	12
Septicæmia	1	3	4	11	19
Tonsillitis	136	70	35	243	484
Typhoid condition	6	61	17	37	121
Ulcers	1	20	13	30	64
Venereal	7	26	15	60	108
Worms	...	3	5	10	18
Total	2584	2510	2797	3617	11,508

Of these employés 200 are girls, whose ages average sixteen years. Some 800 are boys between the ages of fourteen and twenty years, while probably four-fifths of the entire number are either foreigners or are born of foreign parents. Of these we find that the machinists and well-paid mechanics are Germans, Norwegians, and Swedes. The mechanical workers, that is those who feed automatic machines, are Irish and Norwegian lads; while the moulders and laboring men, such as helpers, truckers, etc., are principally Poles, Bohemians, and Jews of all types, among whom are many Russians.

It might be well to explain that our object has been to *prevent* rather than *cure*, and that this plan has been very successful is demonstrated in the column of "sick men off." In January there were probably 400 men reported as sick at home, but as this excessive number was due to the epidemic of influenza, we will leave this item and begin with February, when there were 263 men who were reported as having lost at least half a day on account of sickness.

This number has been gradually reduced until June, when, on account of the excessive heat of that month, as well as from the influence of whiskey and immense quantities of beer consumed by these men, we find that there were 117 men at home sick. It might be interesting to state that many of these men who work at the furnaces at a temperature of about 140° F. have an idea that the more whiskey a man drinks the better he can stand the intense heat; but we know that the temperate man is seldom affected by the heat. From June the figures vary but very little in their downward course, and in December we see a very flattering result, namely, only 29 men reported as having lost any time at all on account of sickness. These results seem to demonstrate practically that after all *preventive medicine* is very beneficial to the poor man, who cannot afford to be sick, and who, on account of his surroundings, is far more liable to all the diseases to which flesh is heir than a more prosperous fellow-being who can afford a small house or several rooms in a clean and healthy neighborhood, rather than share the same quarters with many families in possibly a basement in some wretchedly unhealthy locality.

It should be explained that only 94 of these 1055 cases applied to us for medicine; the balance of the number were either taken sick at night or at a time when they could not find the company's physician, or some possibly felt that their ill feelings would not amount to anything and that they would be themselves again on the morrow, while many others, decided followers of fatalism, believed that if a man was destined to be sick he must be so, and that the "old fogyism," "a stitch in time saves nine," was a most atrocious fallacy. However, we find that of 11,508 different cases seen, only 94 have lost any time at all on account of the condition for which they received treatment—which proves conclusively that the old adage applies as well to medicine as it does to the chain-stitch seam of a man's trousers.

It will be noticed that the chronic cases have also been reduced in number. We find that the surgical cases required about five dressings each, while each medical case consulted us nearly twice.

In looking over the tables we find that the surgical cases, which have been principally of a minor nature, have increased during the latter part of the year, when the days have grown dark early and when the men have been rushed with their work. A natural result is that we have many fingers caught in the gearing, giving us badly lacerated members; but

very few of these, with conservative surgery, have required amputation.

Another common accident results from a boy's trying to shift a belt with his hand, when suddenly his arm is pulled under the drum. From this cause we have had four cases of inter-condyloid fracture. Two cases of fracture of the olecranon were the result of "sliding bases" when indulging in base-ball. In these cases, the feet being pushed forward, the weight of the body was thrown upon the hand, with the above result.

In order to protect the firm, a factory surgeon should be a strong believer in conservative surgery, and should refrain from doing any amputation, except as a very last resort, for upon the slightest provocation, even the loss of a finger-tip, whether the result of his own carelessness or not, the man will sue the company for heavy damages, and in many cases the jury, whose sympathy is always with the man, will return an unfair verdict against the company. There was one case last year which will illustrate the desire which many men have for an opportunity of suing a company. A man, after informing a fellow-workman of his intention, walked deliberately over to a very heavy machine, thrust his hand into the gearing, and had the member taken off at the wrist. The testimony, however, was so very much against him that his attorney advised him to refrain from instigating any damage suits against the concern.

There were two cases of fractured ribs, the result of muscular action, both cases being in blacksmiths. There have been a great many cases of burns from molten brass and iron, caused by a man's pouring the hot metal into his shoe or by the presence of water in the mould, when an explosion will occur and the metal flies in every direction.

In all of these cases nothing has given such universally good results and speedy recovery as cleansing the wound with liquid vaseline or olive oil and then dressing the surface with bismuth subnitrate. In fact, so very satisfactory have been the results accomplished with this agent that it has been used as a dressing in a large proportion of my surgical cases in preference to iodoform. It is a good antiseptic, an astringent, is cheap, and above all is odorless.

Pyoktanin has been relied upon in cases of ulcers or injuries and burns of the eye, but in general the results have not been sufficiently successful to warrant its universal use.

Aristol I have used in chronic ulcers with good results.

The strains and sprains are conspicuous during those periods when the men are out of doors indulging in sports, base-ball, wrestling, etc.

The anæmia, as would be supposed, was found principally among young girls and boys, who did not have sufficient strength to accomplish the work they had undertaken.

Amenorrhœa is found among the youngest girls. It seems rather strange that, although these girls are associated intimately with men of all classes, and are subjected to vice, licentiousness, the influence of cheap theatres, etc., they should menstruate so late in life, the majority being sixteen and seventeen years of age before the function is properly established.

Brass poisoning is conspicuous during the warm spring months, when the system seems rather run down after a hard winter, when the pores of the skin begin to open.

This condition is nicely controlled by nitro-muriatic acid. I do not pretend to know what the exact chemical action is, and it was only by accident—as, though we are loth to admit it, most discoveries are made—that I learned of its virtue. Early in the year a man in the brass foundry came to me with what I considered chronic dyspepsia. His troubles were confined to his stomach, where he complained of pains, etc.—though many of the men complain of pain in the chest, and some of them even have green hair. I put all these men on the strong acid with very gratifying results. The first man gained nine pounds in one week and claimed that he felt very well.

The fumes which the men inhale contain oxide of lime, antimony, and iron, about 40 per cent. pure copper, 5 per cent. arsenious acid, 10 to 15 per cent. sulphur, 15 to 20 per cent. sulphuric and sulphurous acid in combination, and 14 to 19 per cent. of water.

Diarrhœa and dysentery are conspicuous during the third period, although, on account of bad food, poor surroundings, meagre clothing, etc., these conditions are prevalent during the entire year.

The kidney troubles include nearly every affection that is common to that organ, and in the majority of cases the disease is the result, either directly or indirectly, of alcohol.

Skin affections result especially from the irritation caused by fine particles of brass lodging on the surface of the body or upon the action of the corrosive fumes arising from the hot metal.

There have been 7 cases of goitre under treatment during the last quarter; 3 of these cases (nearly 50 per cent.) succumbed to inunctions of a 20-per-cent. ointment of aristol, while 3 more were obstinate, refusing to disappear until 20-per-cent. solutions of carbolic acid were injected into the tumor three times weekly; the seventh case was so very obstinate that it was not at all influenced by these two agents, and not until electrolysis was resorted to did it disappear. There are, however,

very few cases which cannot be controlled by carbolic acid. It has proven an excellent remedy in our hands.

During the epidemic of influenza I found nothing which gave such immediate and permanent relief as *antifebrin* given in three-grain doses in hot whiskey, after dinner and supper and on going to bed.

Of 720 cases of that form of influenza known as "la grippe" under treatment last January, only 54 of this number lost any time on account of sickness at home. Of course, the antifebrin controlled only the nervous, febrile, and painful symptoms. The gastric form of the condition received in addition symptomatic treatment. Antifebrin has been used extensively in headaches of the girls, and although they have continued at their work, running in and out of *hot ovens* after taking the drug, there have been no evil results whatever.

Malaria and rheumatism are prevalent at all times, but conspicuously so during damp weather.

Nothing has given such good results in cases of bleeding piles as twenty-five-grain doses of powdered ipecac, repeated once or twice.

Typhoid fever and cases bordering on this condition are especially prevalent among the poor foreigners, who live huddled together like so many sheep, and from this cause we have had several deaths.

As a cause for all these conditions three influences are predominant:

Preëminently causation is due to the home surroundings, social habits, and alcohol.

Secondly, and as aggravative of the conditions arising from the above causes, are the climatic influences, and lastly, the industrial surroundings—to which latter influence can only be attributed the surgical cases and conditions which are peculiar to the men's occupation, such as nephritis and paralysis among the lead-workers, bronchial affections among the polishers and grinders, and gastritis among the brass-workers. To climatic and social influences can be attributed the majority of the conditions enumerated in the tables.

For instance, we find in a great measure that diseases analogous in their general characteristics group themselves singularly together at special periods, as if the result of fixed physical and chemical laws. During cold weather such conditions as bronchitis, influenza (colds), tonsillitis, all respiratory affections, are prevalent; while during the hot weather there are grouped together those diseases whose essential symptoms are exudations from intestinal surfaces or from the liver.

There cannot be a more worthy charity which a manufacturer can bestow upon poor mechanics and laborers than to provide somebody who will care for him when disabled by sickness. Most of these men have large families, who consume every penny long before it is earned, and naturally the man has very little money to spend for a physician's services or medicines; and even if he should do so, the quality of both, which he could procure in his immediate neighborhood, would be questionable.

Looking at the subject in another light, there are *very few* investments that will net a manufacturer greater returns than a medical service among his men; and, after all, why should not a manufacturer devote such sums as he may feel disposed to give to charity to his own men, who really earn the money, rather than lavish it upon the many so-called "charities" to which he is always expected to contribute?

State and Ontario Sts., Chicago.

CLINICAL SUGGESTIONS FROM CASES OF "LA GRIPPE."

By SAMUEL S. WALLIAN, A.M., M.D.,
of New York.

Ignoring the question of the nature and etiology of this prevalent and somewhat treacherous malady, whether of zymotic or telluric origin, a specific germ disease or an epidemic influenza, of an unusual and unaccountable type, the characteristic, persistent and decidedly serious complications and sequelæ of "la grippe" make its clinical study a matter of intense and immediate importance to every physician, as well as to every inhabitant of the country.

In most of the larger cities, as well as in the rural communities, it is at this moment epidemic, and is sending the death-rate to a figure which may well be a cause of alarm to the most conservative and indifferent of the profession.

It would be preposterous to assume that the rapidly increasing death-rate from pneumonia and other sudden and fatal forms of respiratory disease, from "heart failure"—which has become a popular as well as a professional fad—and from the various other manifestations of a condition of general vital prostration, which follow so closely in the wake of this prevailing malady, are attributable to an old-fashioned influenza, or periodical and rather eccentric "bad cold," which is to be annually expected and combated.

At the first announcement of the scourge it was greeted by the press and the public with a good deal of badinage and an effort at grim humor. It was presumed to be a rather disagreeable but comparatively harmless Russian joke, and the daily press found in it a stock source of humorous sarcasm. All this is changed. Funeral notices have crowded out the funny corner, and the question of how to

cope with the new foe to life is now admitted to be of the most serious importance.

The vital point is not so much as to technical origin and microscopical curiosities of the disease, but *what shall we do for our patients?*

The nostrum venders are reaping a rich harvest, measured in dollars, by proclaiming loudly that each of their mixtures, from Ayer's Pectoral and Antipyrine to Scott's Emulsion, is a specific for the disease. No doubt, hundreds of cases have been aggravated, or made unnecessarily fatal, by indiscriminate drugging, under the direction of domestic advisers and reckless counter-prescriptions. Nor has this ill-advised drugging been limited to the laity and the unscrupulous pharmacist. Routinists in the profession have done their share, have relied on those fatal make-shifts, the anodynes and antipyretics, and as a result have inexcusably swelled the death-rate, while adding nothing to our knowledge of the pathology or therapeutics of the disease. For this reason many of those who have treated a large number of cases have nothing of value to offer as a result of their experience. As is true in all new or uncommon manifestations of disease, better half a dozen cases in the hands of a thinker than a thousand under the monotonous *régime* of the mere routinist.

From the loaded condition of all the secretions it is evident in these cases that the blood is from some cause seriously poisoned. Whether that poison is produced by a microbe inhaled from the air—a mode of accounting for otherwise quite unaccountable diseases and infections now quite in vogue—or is absorbed from some other source, may some time be demonstrated. The first indication is prompt and efficient elimination by every available channel. Purgation is hardly allowable, in view of the extreme prostration which is so common a feature. Diuretics are both uncertain and inefficient, although they may sometimes be found auxiliary to other measures. The skin and lungs are unquestionably the most efficient organs through which to operate. In case of robust patients, an efficiently managed Turkish or Turko-Russian bath at the outset is one of the promptest measures at command. It relieves congestions, causes rapid elimination, and equalizes the circulation better than any measure I have tried. Few patients are too weak to bear this measure, if it be intelligently adapted to each individual case. When for any reason it is not available, I substitute the full hot bath, and direct that this shall be as hot as can well be borne for five or ten minutes, after which the temperature may be reduced, or the extra hot immersion may be followed by a momentary shower of quite cool water. To the hot bath, as a detergent, I add bicarbonate of potash or soda, or, preferably, refined borax and aqua ammonia, or eau de Cologne, which makes it both stimulating and refreshing. If the shower be omitted it should be replaced by a rapid splash, or hand-douche of cool, but not shockingly cold, water—which latter is too often heroically advised.

This is to be followed by a thorough and free use of measures which directly facilitate oxidation of the morbid elements existing—whether *absorbed* or *developed* we need not stop to inquire—in the blood. First of all, place the patient in a large, airy, and well-ventilated room. See to it that the room is not crowded with upholstery—thick, fluffy curtains, plush furniture, and heavy, absorbent carpets. It would be well to observe all the precautions which are deemed desirable in case of the more decidedly infectious disease. The readiest method of disinfecting and rendering the sick-room aseptic is by means of peroxide of hydrogen, which is to be thoroughly sprayed about the room every two or three hours. Simple as the process is, it becomes a most valuable adjunct to other measures. It not only disinfects in a most natural and efficient manner, it also liberates free oxygen in an extremely active or ozonized condition, and thus directly contributes toward the main object. Any good hand atomizer, which has either glass or hard-rubber tubes, will answer the purpose. Metal tubes are not allowable in connection with the peroxide. In extreme cases a constant spray of peroxide solution (10 to 15 vols.) may be kept up by means of any good nebulizer attached to an air-receiver, worked by a hand-pump.

Add to this free and frequent inhalations of pure oxygen, to the extent of from 15 to 25 gallons per diem. See to it that these inhalations are properly performed, and not left to the careless and inefficient manipulation of an inexperienced nurse or other attendant. To prevent sequelæ, these inhalations should be kept up for a week or two after convalescence has fairly set in. Oxygen will be found to do efficient service in restoring tone to the impoverished blood, and through this to the entire vital organization. It promotes digestion and assimilation, and has no possible drawbacks to its free and persistent use. Sometimes this method, the inhalation of this gas, proves ineffectual—as from the abnormal condition of the respiratory mucous membrane, coupled with imperfect inspiratory efforts on the part of the patient. In these cases it will be amply worth while to take the trouble to administer the gas *per rectum*, or, after Valenzuela, hypodermically. By either of these methods it is quite promptly absorbed, and soon shows its good effects.

181 ST STREET AND FORT WASHINGTON AVENUE.

CLINICAL MEMORANDA.

MEDICAL.

A Reliable Purgative Enema.—The following enema has proved so reliable and satisfactory in my hands, that I feel it is worthy of a brief note:

℞.—Sulphate of magnesia . . 2 ounces.
Glycerin . . . . 2 "
Oil of turpentine . . . ½ ounce.
Water . . . . . 2 ounces.—M.

Label, "To be used as an enema."

To move the bowels after abdominal section or after plastic operations on the female pelvic organs, it has been in constant use for many months. When used alone it has moved the bowels, as a rule, promptly; and has been equally effective when given as an adjuvant to some cathartic taken by the mouth.

Prior to the employment of this formula, I had used the simple enema of glycerin, and of glycerin and turpentine, which are distinctly inferior to the one above recommended.

The combined action of Epsom salts, turpentine, and glycerin is very effectual, not only in evacuating the rectum, but also in getting rid of flatus, the presence of which in the bowels is the cause of much of the pain present after abdominal section.

I have had the opportunity, upon two occasions, of testing the activity of this enema in cases of threatened obstruction of the bowels following operation. Other measures failing—including purgatives and large and small enemata—I have introduced a long, soft tube up the rectum, and given this enema into the descending colon, with the happiest results.

Now that the use of opium is banished from the after-treatment of cases of abdominal section, this enema has, in my hands, become the great anodyne—which fact is quickly realized by patients, who demand its frequent use.

When given through the rectal tube, its employment promises much in cases of partial obstruction of the bowels, and also in cases of obstruction due to paralysis of the bowel.

The enema is given best through a hard-rubber piston syringe.

Charles P. Noble, M.D.

Philadelphia.

Purpura Hæmorrhagica: with a Report of Two Cases.—These two cases are exactly opposite in their nature. Through the kindness of Dr. M. D. Ellison, of Canisteo, N. Y., I was allowed to see the following case:

Case I.—Mrs. S., aged thirty-three years, married, and had given birth to three children, two of whom are living, the elder being ten years of age. I saw the patient June 26, 1890, in the fourth month of her pregnancy. She was anæmic and poorly nourished, and complained of a great deal of pain in her limbs. There were a few purpuric spots on the forearms and legs, which seemed very sore. The patient was put on a nutritious diet and in good hygienic surroundings. Small doses of fluid extract of ergot, tincture of the chloride of iron, quinine, and dilute sulphuric acid were given, and a bath of alum and alcohol ordered. The hæmorrhagic spots were not constant, the old ones being absorbed and new ones appearing. The disease did not seem to be influenced by treatment, symptoms of cerebral anæmia developed, and the patient died July 3, 1890. There was no hæmorrhage from the mucous membranes.

Case II.—Willis S., aged two and a half years; apparently in good health; family history good, with the exception of an aunt on the mother's side, who died with a similar affection. When the child was weaned from the breast it was fed with milk from a farrow cow and suffered from indigestion for a period of six months; but when the milk was changed the child grew healthy and strong.

I was called at 4 P. M. on December 30, 1890, to see the boy. A history was given of a feeling of malaise for several days, the child being bright and playful in the morning, but during the afternoon would get tired, feverish, and fretful. He presented a slight hæmorrhagic spot at the femoral opening on left thigh about the size of a silver half-dollar.

I saw patient again at 7 P. M. and found that the spot had become larger, and in addition there were other hæmorrhagic spots on the inside of thighs and calves of the legs, which established a diagnosis. He was given ergot and iron up to the point of tolerance, was kept cool, and astringent washes were used. Stimulants and a most nutritious diet proved of no avail; the hæmorrhage continued, and the little fellow died at 11 A. M. the next day. The bleeding was confined entirely to the lower extremities, which were filled until they were hard with blood.

"Bled to death," we say, and yet not one drop of blood was visible outside the body.

If someone could devise a method whereby we could recognize the premonitory symptoms of this fatal form of the disease and establish a prophylactic form of treatment, it seems to me it would be a great achievement.

Case I., I am told, aborted a few hours before death and suffered much.

Case II. died without pain, and the mind was clear up to the last few minutes.

Roy Dunham, M.D.

Greenwood, N. Y.

Influenza.—During the present epidemic of influenza I find, as an antipyretic and analgesic, nothing better than phenacetine, or phenacetine and salol in combination. With very few exceptions, the temperature has been lowered and the pain greatly relieved after the administration of ten grains of phenacetine, or five grains of phenacetine and five of salol, followed by five grains of phenacetine, or two and a half grains each of salol and phenacetine every three hours. I usually give this for twenty-four hours, rarely finding it necessary after that time.

C. Emmerling.

Pittsburg, Pa

PATHOLOGICAL.

A Case of Abscess of the Liver Opening into a Bronchus.—Adam R., aged thirty-four years, single, born in Germany, a farm hand, was admitted to the Episcopal Hospital under Dr. Caspar Morris's care August 9, 1890.

Present illness began with an attack of dysentery one year ago last May; he has since had frequent lancinating pains over the hepatic region, and during the summer appeared to have suffered from irregular chills, fever, and night-sweats. Several months ago he noticed that his feet and legs were somewhat œdematous, and they have remained so. Upon his admission patient was very thin, and presented a peculiar, sallow, earthy appearance; conjunctivæ faintly yellowish, and the lancinating pains were still complained of.

Examination of heart and lungs was negative. Abdomen slightly bulging in the right hypochondrium, and there was marked tenderness to touch over the whole hepatic region. The liver dulness was eight inches in mammary, two and a half inches in median, and five and three-quarters inches in axillary line. Abscess of the liver was suspected, but fluctuation could not be made out.

On October 11th intense pain was complained of over the sixth right interspace, with sharp pricking sensations in epigastrium and right hypochondrium. On the 14th the pain was in the tenth space in the axillary region, and much aggravated by pressure. Urine gave no trace of albumin with heat and nitric acid test, but well-defined ring with tannic acid. Peptones 0.24. Spleen enlarged, measuring six inches vertically and about four transversely. Posteriorly the liver dulness measured seven inches, and anteriorly the dulness extended almost to the umbilicus. Great pain was referred to the free end of twelfth rib.

On November 23d there was diarrhœa with mucous and bloody stools. The pulse was irregular and intermittent. Estimated red blood-corpuscles at 3,262,000. White corpuscles not markedly in excess of normal.

On December 1st had slight cough attended with mucous expectoration, which on the 6th was much increased, and accompanied by free expectoration of brownish (blood-stained) sputa. With hypodermic needle I punctured the upper portion of the region that was found to be dull on percussion, and drew off some purulent matter and examined for bacilli, but found none present.

On December 12th he expectorated about eight ounces of greenish-brown matter. The patient was very weak with an intermittent pulse and complete anorexia. Death occurred on this day from exhaustion.

Autopsy: Body extremely emaciated. Anterior border of liver extends below umbilicus. Numerous firm adhesions between liver, diaphragm, and right kidney. The right lung also bound down firmly to diaphragm, and in trying to separate these adhesions a large abscess cavity was opened in the upper posterior portion of the right lobe, which was found to contain about a quart of foul-smelling pus. Only about half an inch of sound liver tissue remained at the upper posterior portion of the right lobe, bridging over the abscess cavity. The walls of the cavity were composed of shreddy false membrane and covered with much recent lymph, but a complete cicatrization had not occurred, though in places a smooth wall of protecting lymph had been formed. A fistulous communication was discovered passing from the abscess cavity through the diaphragm into one of the bronchi near the lower border of the lower lobe of the right lung. A small quantity of pus escaped from the cut end of the trachea. The *lungs* were emphysematous, and the right lung, particularly, a good deal congested, but it showed no signs of pneumonic infiltration. The *spleen* weighed twelve and a half ounces; irregularly lobulated. *Right kidney* firmly imbedded in false membranes and attached to lower border of liver; appeared fatty. *Heart* dilated; right auricle contained a large currant-jelly-like clot; left ventricle dilated and contained a large clot. Numerous ulcers in rectum and descending colon, dysenteric in type.

Though the diagnosis in this case had been pretty well established some weeks before the patient's death, the ignorance of the seat of the suspected purulent accumulation in the liver deterred me from advising a free opening. One or more exploratory punctures should have been made and the seat of the accumulation in this way determined, and it is possible that if this had been done soon after I first saw the patient in October, and free opening made and good drainage secured, his life might have been prolonged. An interesting feature of the case was the almost entire absence of fever, at least during the last month or two of patient's life. His appetite was unimpaired until within a very short time of his death.

HENRY M. FISHER, M.D.

MEDICAL PROGRESS.

Ipecacuanha to Increase Labor Pains.—DRAPES (*Les Nouv. Remèd.*) affirms that ipecac, in the form of wine of ipecac, in the dose of ten to fifteen drops, repeated every ten minutes, constitutes a powerful remedy to provoke strong contractions of the uterus in a case of uterine inertia or rigidity of the cervix, which threatens to indefinitely prolong the labor. After the second or third dose strong uterine contractions will come on, will repeat themselves at regular intervals, and tend to rapidly bring the labor to an end. That which makes ipecac in this condition superior to ergot of rye is that it never provokes tetanic contraction of the uterus, so frequent after the administration of ergot.

The Action of Hydrastin upon the Vascular System and the Uterus.—Authorities are divided upon the mode of the action of hydrastin on the vascular system. Some have observed an increased blood-pressure and slowing of the heart's action, whilst others affirm that the drug paralyzes the vascular system. The uterine contractions provoked by hydrastin are due, according to some, to the direct stimulation of the muscles and of the cardiac nerves; according to others, to the stimulation of the central nervous system. It was for this reason that Serdtseff had undertaken new experimental researches upon frogs (sixty-two experiments) and upon warm-blooded animals (fifty-seven experiments). These are the results obtained by this experimenter:

Given in a small dose hydrastin provoked, in frogs and in warm-blooded animals, slowing of the heart's movements, owing to a stimulation of the inhibitory apparatus, both peripheral and central. Small doses always increased blood-pressure; by larger doses it was lowered.

These differences depended upon the state of the vasomotor centre. Small doses were not followed by convulsions, and did not paralyze either the respiration

or the heart. He thinks, then, that if some observers have verified the paralyzing action of hydrastin upon the vascular system, it must be those who have given larger doses of the remedy. Regarding the influence exercised by hydrastin upon the uterus, the voluntary or rhythmic contractions of this organ would be increased in their strength, their number, and their duration.

Hydrastin does not act *directly* upon the neuro-muscular apparatus of the uterus, but *indirectly* by the intervention of the central nervous system, and that very probably by way of the vasomotors.

In sustaining these obtained results the experimenter counsels the use of hydrastin in all those cases of hæmorrhage where it would be, for one cause or another, unwise to await strong contractions of the uterine muscles, and where, in consequence, it is of the greatest importance to attack the bleeding through the vessels of the uterus.—*Les Nouveaux Remèdes*, February 24, 1891.

Treatment of Convulsive Tic.—Krueger is reported in *La Semaine Médicale* to have cured a case of bilateral convulsive tic, probably due to exposure to cold, and occurring in a young girl of a non-hysterical temperament in the following manner: After the disease had proved itself very obstinate, resisting for three weeks the bromides and valerianates, relief was finally obtained, both rapidly and completely, by the use of very hot poultices applied to the face, upon both sides, until profuse local perspiration was developed.

Atropine for Paralysis Agitans.—Moretti has treated three cases of paralysis agitans by hypodermic injections of atropine. The results obtained were very encouraging. He commenced the treatment by the injection of $\frac{1}{100}$th of a grain, and progressively increased the dose until $\frac{1}{30}$th of a grain was taken each day, divided into two injections.

Gargle for Acute Tonsillitis.—

℞.—Ammoniated tincture of guaiac, Compound tincture of cinchona } of each 6 drachms.
Chlorate of potassium . . 2 "
Honey . . . . . 6 "
Powdered gum arabic a sufficient quantity.
Distilled water enough to make 4 ounces.

From one-half to one teaspoonful of this should be used as a gargle in a little water every two or three hours.—*Journal de Médecine de Paris.*

A Gargle for the Relief of Fœtid Breath.—The *Revue Générale de Clinique et de Thérapeutique* gives the following prescription for the relief of this condition:

℞.—Saccharine, Salicylic acid, Bicarbonate of sodium } of each 15 grains.
Alcohol . . . . . 1 ounce.
Essence of peppermint . . 10 drops.

A teaspoonful of this is to be placed in a wineglassful of hot water, and used as a gargle once or twice daily.

The Treatment of Pulmonary Tuberculosis by Hypodermic Injections of Iodoform.—Gavoy, in the *Gazette Médicale de Paris*, details his method of treating pulmonary tuberculosis with iodoform. Morning and night, a hypodermic injection of 30 minims of the solution, of 1 part to 100 of iodoform in oil of sweet almonds, is given.

No febrile reaction occurs, and the results are very good. The cough diminishes rapidly, and the characteristic muco-purulent catarrh first becomes more liquid and then ceases. The character of the voice is also improved, and the lung becomes more permeable to the air. Inspiration is increased in depth, and the râles become more moist. Other symptoms showing the favorable influence of this treatment are a decrease in the night-sweats and a renewal of the appetite. The therapeutic influence of iodoform over carious bone and pus-corpuscles seems to point to the fact that it exercises an analogous action upon tubercular processes accompanied by resolution and necrosis of the lung.

Antipyrine in the Treatment of Gonorrhœa.—In the *Revue Générale de Clinique et de Thérapeutique* it is stated that Brindisi employs the following solution as an antiseptic lotion in the treatment of gonorrhœa:

℞.—Antipyrine . . . . 45 grains.
Sulphate of zinc . . . 4 "
Rose water, Cherry-laurel water } of each 2 ounces.

Label, "To be used as an injection."

Prescription for Tetanus.—*La Semaine Médicale* states that Mayer employs the following prescription in the treatment of tetanus:

℞.—Hydrochlorate of morphine . ⅙ grain.
Chloral . . . . . 15 grains.
Bromide of sodium . . . 20 "

Make into one powder, which should be wrapped in waxed paper; give from three to six of these powders each day.

Injection for Tubercular Diarrhœa.—

℞.—Olive oil . . . . . 6 drachms.
Guaiacol . . . . . 10 drops.
Water . . . . . 8 ounces.
1 yelk of an egg.

This injection is recommended for cases of tubercular diarrhœa.—*Journal de Médecine de Paris.*

Prescription for Rhachitis.—In the *Journal de Médecine de Paris* the following prescription is given for the treatment of rhachitis:

℞.—Phosphorus . . . . 1 grain.
Absolute alcohol . . . 5 drachms.
Spirits of peppermint . . 30 drops.
Glycerin . . . . . 2 ounces.

Six drops of this mixture may be given in water three times a day, and after the lapse of one week another drop may be added.

CURRENT LITERATURE.

SATURDAY, APRIL 25, 1891.

PYOKTANIN.

DR. O. WANSCHER refers to Professor Stilling's paper, in which the latter called attention to the antiseptic properties of the aniline dyes and named them pyoktanin, from their pus-killing properties. Experiments with the aniline dyes are now justifiable, for Merck has produced a non-poisonous aniline which can be given in doses of 15 grains to dogs, with no result other than to stain their fæces blue.

Wanscher confirms Stilling's statements regarding the pus-destroying properties of pyoktanin, but he is not certain that the good result following its use in two cases each of iritis and of choroiditis are to be ascribed to the antiphlogistic power of the pyoktanin. On the other hand, Carl and Braunschweig have disputed its antiphlogistic power, and also claim that it caused severe pain, shooting into the brow and the temple, and that great irritation with croupous exudate occurred upon the ocular conjunctiva after its use. Wanscher thinks these statements unjustified. He has found in a one-per-cent. solution of blue pyoktanin (methyl violet) an agent which fulfils the desire expressed by Billroth for a stain which will find and destroy its own peculiar bacteria without injuring the tissues. The results of Carl and Braunschweig he attributes in part to improper use of the stain. The pyoktanin, to be effective, must seek out the bacteria in the tissues; hence, it must be dissolved, clear, and easily absorbed. The more granular it is the more difficult will absorption be. Moreover, the application must be so made that no danger is incurred of transferring any pyoktanin from one patient to another, which can easily happen if the same brush is used for several patients. Pyoktanin in a half-dried condition destroys the bacteria of pus, but not those of croup and diphtheria. Possibly the semi-dried mass is irritating, just as powdered chlorate of potash acts as an escharotic, while a concentrated solution has no such action. Again, the pyoktanin must be employed repeatedly until the tissues are effectually stained. To this end ten or twenty drops at a sitting are often necessary, and they must be instilled every two or three hours, according to circumstances. Carl discards it as ineffective because he did not succeed in checking a serpiginous ulcer by using one drop a day.

For six weeks, Wanscher says, he instilled pyoktanin (blue and yellow) in nearly every case that applied. Fifty patients received upward of a thousand instillations. About twenty patients came daily to his clinic, instillations being employed generally four times a day; altogether there were three hundred instillations a day. He says in no case did he see irritation follow. None of his patients have complained of pain; and, on the other hand, he says he has undoubtedly rescued three eyes which would have been lost through gonorrhœa, and two others have recovered from it with full vision. Braunschweig has treated seventy patients with pyoktanin in two months, but it was not employed in a case of gonorrhœa. Wanscher reports his four cases in detail.

Besides the cases of gonorrhœa, he has treated by instillation of a one-per-cent solution of pyoktanin two cases of cataract operation, four iridectomies, one squint operation, one case of gonorrhœa of the lachrymal sac, two cases of specific choroiditis, one of simple iritis, two of suppurative conjunctivitis, superficial keratitis, etc. The result in these and in other eye and surgical cases in private practice has confirmed his good opinion of pyoktanin, especially of the blue pyoktanin.

In his private practice he says he has cured a gonorrhœa of the lachrymal sac which had persisted a year under other methods of treatment, even including galvanic stimulation of the mucous membrane of the canal. He has also employed it in the dressing after operation of a case of osteitis and necrosis of the tibia which had lasted twenty-five years. The result was favorable, and no irritation was produced. A walking case of gonorrhœa, associated with great dysuria, was abated with a one-per-cent. solution of pyoktanin. The same result was obtained in a case of balano-posthitis. A good result was also obtained in a case of ingrowing nail and inflamed corn. After operation a bandage soaked in a one-per-cent. solution was applied. The wound healed in a few days, notwithstanding the fact that the patient continued to go about.

Wanscher finds yellow pyoktanin less active than the blue. The color disappears quickly when used upon the eye, but more slowly when used upon the skin. Alcohol quickly dissolves the fresh stain.

In conclusion, he speaks of a one-per-cent. solution of blue pyoktanin as one of the most valuable of our therapeutic remedies for use in purulent ophthalmia.—*Therapeutische Monatshefte*, February, 1891.

ANTISEPTIC ACCOUCHEMENT.

IN the *Journal de Médecine* for February 25, 1891, LUCAS-CHAMPIONNIÈRE furnishes a condensation of the various antiseptic precautions observed in the different French maternities. In the service of Professor Pinard in the Baudeloque clinic, care is taken to clean the waiting wards daily with pieces of linen cloth moistened in a solution of the biniodide of mercury of the strength of 1 to 2000. The labor wards are cleaned in the same way several times daily. When the patient enters the maternity ward, if the stage of the labor permits, she is given a bath, and the external genitalia are washed first with soap and then with the biniodide solution. The woman then receives a vaginal injection of the biniodide solution, 1 to 4000, and a square of tow soaked in the biniodide is placed over the vulva. Every three or four hours a new injection of the biniodide is given, especially if there have been frequent examinations made; other injections are given after the birth of the child, and two hours

after delivery the woman is carried into the ward for puerperal women. The cord of the child receives a dressing of sublimated wadding, and the breasts of the mother are covered with boricized cotton. Immediately after birth the child receives an instillation of lemon-juice into the eyes. This prophylactic measure has given excellent results. The eclamptic or albuminuric women receive injections of a saturated solution of naphthol. During the puerperium, in case of fœtid lochia, vaginal and intra-uterine injections are given, and should there be fever which persists, the woman is isolated and placed under continued irrigation with phenic water, 1 to 60. In case of an operation upon the vagina or perineum, a piece of iodoform gauze is placed in the vagina and upon the vulva. After each operation the metal instruments are heated in the alcohol flame—except the cutting instruments—and then placed in a solution of phenic water, 1 to 20. Rubber instruments are kept in a glass containing the biniodide solution. The antiseptic substances employed are:

1. The solution of the biniodide of mercury, according to the following formula:

℞.—Biniodide of mercury, Iodide of potassium } of each . 7½ grains.
Water . . . 9 ounces 4 drachms.—M.

This solution is employed pure for the toilet of the hands after careful brushing and washing with soap. It is diluted with one-half of its volume of warm water for injections and dressings.

2. The phenic water employed is the strong solution, according to the formula of Lister, 1 to 20.

3. The vaseline which is used for making examinations contains phenic acid, 1 to 50.

Professor Pinard has never had a local or general accident of mercurial origin since he has adopted the employment of the solution of the biniodide of mercury. The solution has no disastrous effects upon the hands of the operators.

Guéniot, surgeon of the Maternity, employs as an antiseptic phenic acid, and has always obtained the best results. He uses the hundredth solution for the living tissues, and the twenty-fifth for the fumigations or the washing of the instruments. The concentrated solution may produce an erythema; the solution in use, the hundredth, is by no means dangerous, and has never produced poisoning, either as a vaginal or intra-uterine injection. When called to attend a patient in private practice, Guéniot employs a phenic solution of the following strength:

℞.—Distilled water . 9 ounces 4 drachms.
Phenic acid . . . 10 drachms.—M.

For living tissues this solution is diluted to about three times its volume with water, and is then used for washing the external genitals, for vaginal injections, and for the antisepsis of the hands of the accoucheur and his assistants. For disinfecting the beds, the soil, the walls, and wash-basins, sublimate solution is employed. This solution is of the strength of 1 to 4000. It is also occasionally used for washing the external genitals and for vaginal injections. A strong solution of phenic acid (10 drachms to 9 ounces 4 drachms of water) is used for the instruments. Examinations are made as rarely as possible, and the lubricating body is boricized vaseline. During labor, solutions of antiseptic materials of weak strength are injected into the vagina. Labor terminated, the eyes of the infant are washed with boiled water, or with a weak solution of sublimate, or one drop of a weak solution of silver nitrate, neutralized by salt, may be employed. The cord is dressed with a small piece of antiseptic wadding. The dressing of the mother consists of a tampon of iodoform gauze. During the following days, and twice daily, an abundant vaginal injection is given. In case of an operation, the following antiseptic precautions are taken: 1. Phenic fumigation of the operating ward by permitting a four-per-cent. solution of phenic acid to boil in the free air; 2. The instruments are boiled in a strong solution of phenic acid (1 to 25); 3. The sponges are composed of pieces of tarlatan boiled in the same solution; 4. Disinfection of the hands; 5. Dressing of the iodoform gauze of commerce.

Porak, in the Hospital Lariboisière, observes antisepsis largely as above. When a woman enters the hospital she is placed in a bath and cleansed with soap. The genital organs are washed in soap, brushed, and bathed in a solution of sublimate, 1 to 1000. After this disinfection compresses soaked in antiseptic solutions are placed over the vulva to prevent later infection. During labor, injections of sublimate, 1 to 2000, are used. Examinations are made as seldom as possible, and then only with every antiseptic precaution. Phenic vaseline is employed as a lubricant. Porak prefers, however, the following preparation:

℞.—Vaseline . . . 3 ounces 5 scruples.
Corrosive sublimate . . . 7½ grains.
Alcohol (to dissolve sublimate) . qt. suff.—M.

Intra-uterine injections are reserved for cases where a macerated fœtus exists, in cases of obstetrical interference, or where vulvar lesions are suspected. In case of a tear of the perineum iodoform gauze is used. The eyes of the infant are bathed in a concentrated boric solution. If the mother has a vaginal discharge, a few drops of this solution of silver nitrate is employed instead.

℞.—Distilled water . . . . 5 ounces.
Silver nitrate . . . . 15 grains.—M.

In case of retention of the membrane, fœtid lochia, or tear of the perineum after unsuccessful union by first intention, vaginal injections are used together with intra-uterine injections. The corrosive sublimate solution for instruments which do not amalgamate is as follows:

℞.—Distilled water . . 9 ounces 4 drachms.
Tartaric acid . . . . 4 scruples.
Corrosive sublimate . . 15 grains.—M.

The solution of 1 to 2000 is reserved for the hands.

SOCIETY PROCEEDINGS.

FIFTH FRENCH CONGRESS OF SURGERY.[1]

THE Fifth French Congress of Surgery opened its sessions on Tuesday, March 31st, in the Medical School of Paris, under the presidency of PROF. GUYON. Many foreign, as well as all the eminent French surgeons, were present at that meeting.

After an appropriate discourse by the President, DR. GUYON, the members immediately set to work.

DR. J. BOECKEL, from Strasburg, read a communication on "Resection of the Knee-joint."

The author prefers, in many instances, resection of the knee-joint to amputation of the thigh, in different pathological lesions. He founds his opinion on a series of 140 patients whom he has observed. The principal conclusions at which he arrived are: suppression of the bony suture, of the hæmostasis, and of drainage. The author thinks that resection of the knee can be performed at any age with safety, in very old as well as in very young people; in children, however, between the ages of five and seven years, resection is excellent, if the surgeon makes an intra-epiphyseal resection and is parsimonious in the excision of bony tissues. He has performed 23 resections of the knee in persons varying from forty to eighty-two years of age, and only twice was he compelled to do a secondary amputation. Age, therefore, is not a contra-indication.

As to the indications for the operation: 1st. In those operations which are obligatory, such as in all tuberculous articulations, he operates early; in these cases he has always found well-defined articular lesions.

If resection is a question in any case, he prefers to employ it rather than the contrary, as he has found that partial operative interference in very often insufficient.

In regard to the *modus operandi*, the author discards the bony suture, which is replaced by vertical suspension of the extremity during twenty-four to forty-eight hours, the excision of a band of skin, or deep catgut suture.

As regards hæmorrhage, all ligatures are omitted as a result of the vertical elevation of the extremity. Drainage is abandoned, which allows one to obtain a cure with one dressing.

Out of 61 operations performed during the last three years, 50 are radical cures without a fistula, 6 are cured with fistulæ; 1 secondary amputation after three months; 1 pseudarthrosis; 3 deaths—1 from influenza, 1 from cerebral accident, and 1 from tuberculosis ten months after operation.

DR. CHIRIAR, from Brussels, presented an interesting history of "Intestinal Obstruction by a Calculus." The patient was a very nervous woman, fifty-one years of age, suffering from a voluminous fibroid tumor of the uterus; she also suffered from severe constipation necessitating frequent purging. In August last she was suddenly seized with symptoms of complete arrest of solid matters and gas. On September 2d she was taken with vomiting, which was bilious at first, but soon became fæcal. On September 6th, Dr. Chiriar proposed surgical interference, which was opposed for two days, but finally accepted.

A sub-umbilical incision five inches long was made, through which the peritoneum was opened. A bloody serum oozed out; the left hand, introduced into the left side of the cavity, came in contact with a hard, movable tumor, which was easily drawn out of the wound; it was then found to be a calculus the size of a small egg, which was absolutely imprisoned in the contracted intestine. The intestine was carefully isolated with sponges and an incision was made from two to two and a half inches in length, through which the calculus was extracted. A Lembert suture was applied to the intestinal wound and the abdomen closed. During that day the patient had three normal passages, and on the fourth day was cured. The calculus weighed 18 grammes, and measured one and a half inches in its long diameter. The centre of it was composed of cholesterin and biliary pigment, while the periphery was calcareous.

In an operative point of view, the author insists on the necessity of carefully applying the sutures. These sutures are always made with catgut No. 1. The mucous membrane was sutured separately, while the serous coat was united by a double Czerny-Lembert suture; in this way complete union always takes place.

As soon as the calculus was removed from the intestine there was a powerful contraction of that part of the gut, which it was thought at first would necessitate an excision of a portion, but as it was thought to be of reflex origin it was left alone, and the consequences were most favorable.

PROF. PANAS, from Paris, next spoke on a case of "Orbital Angioma," which is very rare, as there are only about sixty cases reported as existing in the literature of the subject.

The best diagnostic signs are the coexistence of exophthalmus and a nævus or vascular spot on the eyelid, with a certain degree of softness and reducibility during the first two or three years of its existence.

In the history produced, the lesion had begun at the age of two years and the tumor had been treated by electrolysis and injections of Pagliari water; the tumor had diminished somewhat, but the exophthalmus had persisted. Vision remained good until the age of eight years, when she suffered from typhoid fever; she then presented a phlegmonous inflammation of the orbit, which necessitated enucleation. The author then found a small tumor, deeply situated, which contained pus. This pus was examined and found to contain the bacillus of Eberth, and he had then to deal with a spontaneous infection of the angioma by the bacillus of typhoid fever.

This case of *endo-infection* is not an isolated one, as during the past few months Dr. Panas has found five or six cases in which there was certainly an endo-infection consecutive to influenza. In the case in question, the slow circulation of the angioma had certainly produced an arrest and accumulation of bacilli which had developed in that place and had infected the orbital region.

At the second meeting of the Congress, on March 31st, the communications in answer to the question which had been announced for discussion were considered. This question was: On Surgical Interference in Affections of the Nerve Centres (primitive trephining of the cranium excepted).

PROFESSOR V. HORSLEY, from London, being unable to attend, sent his assistant, Dr. Boyce, who read the

[1] Held in Paris from March 31 to April 4, 1891.

communication; the principal portions of which are: That Dr. Horsley always made a very large trephine wound; the cutaneous flap is very large, as well as the bony opening. The resection is made with a circular saw, as follows: The segment of bone to be removed is indicated, the saw penetrating to about half the depth of the bone; in the centre of this segment a smaller piece of bone is removed, and the rest of the bone, up to the limit indicated by the circular saw, is removed with cutting forceps; as much as possible, all excised bone is put in position again before the wound is closed. As regards the determination of the exact spot to be removed, if there are no lesions visible indicating the diseased part, one can use with great advantage induced currents of electricity.

In regard to tumors to be removed, Dr. Horsley thinks that if after six weeks of internal treatment no good is observed, surgical interference is justifiable. Even in certain cases, where it is found that the tumor cannot be removed, trephining has been sufficient to cause certain troubles to disappear, such as headache, or optic neuritis —which are caused by cerebral compression; while in one case it was found that simple exploratory trephining was followed by atrophy of the tumor.

Prof. Lannelongue, from Paris, then read a paper on "Craniectomy in Microcephalus and in Children Presenting some Lack of Development, with or without Epileptic Fits, all of Cerebral Origin."

The results given are founded on a series of twenty-five cases. In regard to microcephalus, Dr. Lannelongue has found that in such children ossification is very much advanced and the fontanelles are very small, which indicate an *anticipated ossification*, and, as a consequence, the brain is also prevented from developing. Craniectomy is very useful in obstetrical compression which has brought on idiocy; also when there has been a prolonged compression within the uterine cavity as a result of a small quantity of amniotic fluid present.

Meningeal hæmorrhages, especially those of the convexity of the brain, bringing on hæmatoma, circumscribed pachymeningitis, and serous cysts, are cases for this operation.

The author has used two different processes, viz., linear craniectomy and the flap craniectomy. In linear craniectomy the incision is made along the superior longitudinal sinus and can be prolonged through the coronal suture, on the motor or Rolandic zone, toward Broca's centre. He has performed that operation on the occipital behind, between the lateral sinus and the occipito-parietal suture; finally, he also made a transverse and symmetrical craniectomy on the frontal bone by detaching the longitudinal sinus.

Flap craniectomy is the one preferred by the author, and by this he means removal of the cranial substance, which is made so as to leave flaps of bone, which remain sufficiently attached by a broad osseous base; sometimes the flap only involves one bone, the parietal or the frontal, more often the flap is "on horseback," so to speak, on two bones, the frontal and parietal. The flaps have the form of a ∪ or an inverted ∧, rectangular, horseshoe-shape, or T. The loss of substance is to the extent of 8 to 12 millimetres, the operation lasting from forty to forty-five minutes.

The operation is done as follows: The cranium is attacked at one of the extremities of the wound with a trephine, the rest is cut with the forceps. The dura mater is next detached and allowed to remain untouched, unless there should be lesions indicating pachymeningitis, in which case it would then be advisable to open the parts. If the dura mater is opened it must be sutured. As to the periosteum, it is preferable that it should not be touched. In two post-mortems made one and two months after the operation, both patients having died from croup, no bony regeneration through the dura mater was observed. Operative complications are not serious, for hæmorrhage is of slight importance, the meningeal artery and its branches being easily reached.

As to the results of the twenty-five operations, the author has twenty-four operative cures and one death, forty-eight hours after the operation, of acute septicæmia, or the continuous flow of the arachnoid fluid; three cases underwent a little suppuration, the longest one having lasted three weeks; no case of necrosis. The youngest child was eight months old, while the oldest was twelve and a half; thirteen were boys and twelve were girls. As to the after-results, the majority were improved both intellectually and in their ability to walk.

Dr. Th. Anger, from Paris, also presented a case of craniectomy which he performed on a girl eight years old. The previous history was that the child had walked at fifteen months; toward eighteen months the parents remarked a deficiency in the intellectual development, and at this time the patient was seized with nocturnal convulsions, which occurred as often as thirty times in one night. When Dr. Anger saw the child for the first time, these convulsions had not occurred for one year, but as regards intellectual power the eight-year-old girl was not more advanced than when eighteen months old, being unable to recognize her letters; she said "papa" and "mamma," but no phrase could be pronounced. She had not the least notion of cleanliness, and would urinate anywhere. When walking, her head was hanging and her gaze was never fixed.

Examination of the head showed that the left side was flattened, which stimulated the surgeon to operate upon that side.

The *modus operandi* was as follows: A linear incision was made from the frontal eminence to the lambdoid suture, a disc of bone was then removed by trephining, and the cranial excision continued along the above-mentioned line for twelve centimetres (four inches). The dura mater projecting was punctured with a hypodermic needle, but no fluid escaped; the gap was still further enlarged, and finally resulted in a loss of substance having an oval form, being eleven and a half centimetres in its antero-posterior diameter and four centimetres transversely; the skin was then sutured. No accident occurred, and eight days later the sutures were removed. The results of the operation were, that the next day the patient ceased to urinate and have her passages in bed; a few days later she began to ask to eat; then cried when told that her parents were absent; the look was frank, the athetose movements ceased, and the child walked and jumped. When she was brought home to her parents she recognized all her family, and her intellect has gradually gone on improving ever since the operation.

DR. DURET also presented two cases of trephining—one for an aphonia, which followed a fall on the head; the other for traumatic epilepsy, the accident having occurred several years before.

DR. JEANNEL, from Toulouse, presented a very interesting case of "Jacksonian Epilepsy," treated by trephining. The patient was a baker, thirty-two years old, who, in February, 1890, was suddenly attacked by apoplexy, which left behind it a certain paresis of the right superior extremity. Resumed his occupation, when, two months later, spasmodic movements appeared in his right upper extremity, which returned every two days. Anti-syphilitic treatment produced no beneficial results.

These epileptiform attacks occurred every second night, and convulsions were present, especially on the right side, lasting from eight to ten minutes, sometimes accompanied by delirium; he also presented a well-marked aphasia—very variable, however, for sometimes he only could say one word, while at others he could speak sufficiently for ordinary use. No depression of the cranium could be discovered on the left side, but it was found that, when fifteen years of age, the patient had received a stab wound just above the ear on that side; in fact, a small cicatrix could be seen in that location, but it was not adherent. The cranium was opened as usual, on the Rolandic line; the dura mater did not present any pulsation; beneath it, however, existed a soft, violet mass, which was adherent to the cerebral substance, and prolonged itself below and behind. The mass was extirpated with the curette, and an opening about the size of an almond was made; two punctures in the middle of the cerebral substance gave no results. The next day the spasmodic movements had ceased, but were replaced by a paralysis. Speech returned gradually, and to-day there remains only an incomplete paralysis, but, above all, there exists a contracture of the forearm; every fifteen days the patient has an epileptiform attack, during which he bites his tongue.

An interesting case of "Essential Epilepsy" was reported by DR. GIRARD, of Grenoble. The patient, a woman, aged twenty-nine years, had suffered since the age of fourteen with very frequent epileptic fits, with vertigo and unconsciousness. Out of six children, she lost five after convulsions. In November last she shot herself in the right temple with a revolver. When first seen she was found in a deep comatose state, the left arm being inert along the body; at forty-five millimetres from the external orbital or angular process there was a rounded perforation through which the arachnoid fluid escaped. She was trephined and the bullet and several pieces of bone removed. No suture of the dura mater nor drainage were employed; the skin was completely sutured. Union took place in seven days.

Operative results: The coma ceased the day of trephining. The next day the ideas of suicide disappeared, and for five months she had not had an epileptic fit, while vertigo had become very rare. Her menstruation has become regular. This trephining, performed for the injury, seemed to have cured the epilepsy.

DR. REGUIER, of Paris, also presented a case of "Trephining for Jacksonian Epilepsy due to Cystic Glioma." The history is: A child, aged ten years, was attacked, when five years old, with peculiar symptoms. A sensation of pricking of all the mucous membranes of the face, with abundant secretion of the conjunctiva and nose, existed. In 1888 she fell several times on the head and had a cicatrix on the left parietal region. The first convulsive fit occurred in April, 1889. These became more and more frequent until they occurred four or five times a day. They began in the face, the mouth and tongue being deviated to the right, and then the head. Then the convulsions extended to the arm and leg. No sensitive troubles. Prof. Charcot, who then examined that child, gave the following diagnosis: Partial sensitive motor epilepsy, corresponding to a probable lesion of the middle and inferior portion of the Rolandic convolutions.

She was trephined in the Rolandic region, where a gray-colored tumor of cystic appearance was found, but extending so far down into the cerebral substance that only its superficial portion was removed. The wound was dressed and healed. No change took place in the condition. Five months later the primitive trephined wound was again exposed, and the cyst removed with a curette. The next day the patient had six epileptiform convulsions; six days after a new attack with aphasia occurred, but all soon disappeared, and since then, three months and a half ago, she had had no attack and no other symptom presented. The tumor was a glioma with a cystic cavity in its centre; its situation was at the inferior extremity of the pre-Rolandic groove.

NEW YORK ACADEMY OF MEDICINE.

SECTION ON PÆDIATRICS.

Stated Meeting, April 9, 1891.

AUGUST CAILLÉ, M.D., IN THE CHAIR.

THE theme of the evening's discussion was "The Prevention of Diphtheria," and the Chairman introduced the subject by referring to the number of deaths reported to the Board of Health as occurring last year from scarlatina, measles, and diphtheria. There were 3000 cases of scarlatina with 350 deaths, 9000 cases of measles with 700 deaths, and 4500 cases of diphtheria with 1400 deaths. These figures, he said, represented about the average. He thought that in view of the fact that the mildest form of simple sore-throat might become a most severe form of diphtheritic sore-throat, the profession might do the community an incalculable benefit by improving the methods of prophylaxis. Knowing the character of the enemy, and the nature of its attack, we should now be able to protect ourselves against its inroads. By way of suggestion, he alluded to the great good that could be accomplished by cleansing the mouth and nose with mild antiseptic washes, improving the condition of the teeth, and rendering the mucous membranes generally less vulnerable to an attack of this disease. Dr. Caillé said that he admired the efforts that were being made by our Board of Health to prevent the spread of infectious diseases, but he had become convinced that municipal control in large cities was inadequate to cope with this great problem, especially as regards the public and private schools. Many families knew to their sorrow how much disease had entered their households since the little ones began to attend school, and he wished again to call attention to a plan which he had elsewhere described at length, by which,

under a system of daily medical inspection, the schools might be prevented from becoming, as they now are, centres of infection.

The systematic discussion of this all-important subject was opened by Dr. J. Lewis Smith, who first spoke of our present knowledge of the cause of diphtheria, the Klebs-Löffler bacillus. This bacillus causes the fibrinous exudation, but is local and superficial in its action, and does not in itself cause systemic infection. This infection is the result of a ptomaine which is formed by this bacillus, and which is taken up by the lymphatics and bloodvessels. Other microbes, as well as irritants not of microbic origin, sometimes give rise to the formation of a similar fibrinous exudation, but the action of the diphtheria bacillus is characterized by the production of this ptomaine, which by infecting the system gives rise to a peculiar paralysis, and to a nephritis attended by albuminuria, but with little or no dropsy, and sometimes attended by such symptoms of uræmic poisoning as vomiting and convulsions. Dr. Welch has cultivated this diphtheria bacillus, and by a series of inoculations with these cultures has produced diphtheria, so that this theory of the origin of the disease seems to be fully established.

In the decade following 1850, Dr. Smith said diphtheria first made its appearance in New York City, being spread by the sewers, which to this day are a constant and subtle agency in the dissemination of this disease. The speaker cited several instances in which diphtheria had been spread by domestic animals, and also where it had been carried by physicians to their own families. The bacillus was known to be very tenacious of life, and this was well shown in the case of a child who contracted diphtheria from examining the clothing of her mother who had died, two years before, of diphtheria. During all this time the clothing had been packed away in a chest.

Referring to the special subject of the evening, the *prevention* of diphtheria, Dr. Smith said that it should be constantly borne in mind that the physician not infrequently carries the disease himself, and hence his visits to such patients should be short, and when examining the throat he should be particularly careful to stand to one side of the patient, so that no particles of mucus may be coughed out of the patient's mouth and lodge upon his person or clothing. The neglect of this precaution, a physician had recently told him, had resulted in the death of his child. It was a good plan for the attending physician to carry with him tablets of bichloride of mercury, so that he might frequently and effectually disinfect himself, and if he were compelled to go from such a case to one of confinement, he should also change his clothing. During convalescence the patients should not be allowed to mingle with others for at least a month. The vexed question of the value of sulphur fumigation was discussed by the speaker, who decided against this time-honored method, and in support of this position he related an instance in which a ward in the New York Infant Asylum, which had become infected with diphtheria, was fumigated most thoroughly with an unusually large quantity of sulphur, and immedately after the fumigation the air of the room was examined biologically by Drs. Prudden and Cheesman, who found the diphtheria bacillus present in unusually large numbers. Washing the ceiling, walls, and floor with a solution of bichloride of mercury is much more effectual, and did not require that the room should be vacated. Families frequently move out of infected apartments without fumigating them, and hence it was not surprising that others moving into these rooms shortly afterward were often attacked by the disease.

Dr. Smith was heartily in favor of the daily inspection of our schools, and in addition, advised that the schools be disinfected once every month.

Dr. Joseph D. Bryant who was unable to be present, sent a letter, in which he spoke of the efforts which the Board of Health had been making during the past three years to stamp out infectious diseases, and admitted that although these endeavors had proved successful as regards smallpox, but little had been accomplished in connection with other infectious diseases. The ceilings and walls of the tenement houses, and frequently the decorations of our public buildings, were well calculated to harbor and spread disease-germs, yet no good would result from ordering the owner to remove the paper, scrape the walls, etc., for if the owner ignored this, the law was such that the only recourse the Board of Health would have, would be to vacate the house, and this meant sending the poor occupants with their infected goods to some other place. At the present time, rooms were fumigated with sulphur, but a better method was needed. The Board was in a better position so far as the disinfection of fabrics was concerned, for they had recently had erected near the Willard Parker Hospital, in accordance with the plans of Drs. Prudden and Biggs, a very efficient apparatus for the disinfection of fabrics, either by moist or dry heat. The Board would, if desired, take the infected fabrics, disinfect them in this apparatus and return them.

Dr. T. M. Prudden, taking up the subject from the standpoint of the bacteriologist, said that primary or true diphtheria was caused by the Löffler bacillus, which was very tenacious of life, and could be readily carried by the dust. There was also a form of pseudo-membranous inflammation, but this is due to the streptococcus. The diphtheria of animals he did not consider to be identical with that found in the human subject. As the life history of the Löffler bacillus was well known, our present knowledge indicated a line of prophylactic treatment; the medical profession should take the initiative step, and the health boards should then continue the good work. By the use of germicides the bacillus could be killed, and the frequent use of milder gargles and washes would prevent the proliferation and spread of such germs as had become detached from the pseudo-membranes and were liable to carry infection to other parts. Especially was this true when considered in connection with that very serious complication, aspiration pneumonia. An absolute and early diagnosis of diphtheria could be made by the biological culture method, and the provision for such examinations in connection with children's asylums would be of great service, both in preventing epidemics and in assisting in the inauguration of an early and efficient treatment. It was customary in many of these institutions to quarantine in one ward children suffering from various kinds of sore-throat until the diagnosis was certain, but this plan unnecessarily exposed children suffering from

simple tonsillitis, when in a condition to invite infection with diphtheria, to this disease. Such management could not be too strongly deprecated. The speaker had made a large number of biological analyses of air from hospital wards, and in view of the fact that the diphtheria bacillus can be readily carried by the dust, he wished to call attention to the pernicious habit of shaking the bedspreads in the wards. These spreads presented almost as large a dust-collecting surface as the floor of the ward.

DR. A. JACOBI spoke of the strange silence that had prevailed in medical literature generally upon the subject of the *prophylactic* treatment of diphtheria. In addition to caring for those sick with the disease, he thought it would be well to provide buildings or places of refuge for children temporarily sent from home to avoid the disease. In the last thirty years, in New York City alone, fully forty thousand persons had fallen victims to diphtheria, and many more were suffering from its effects, and yet in the face of these appalling figures, we are told that daily medical inspection of our schools is impracticable. When a single case of variola, or of typhus fever, is discovered in the city, the daily press prints the most sensational articles, but thousands are constantly dying of diphtheria, and nothing is done to stay the scourge. If the press would arouse from this apathy and work with the medical profession, it would be easy to establish this daily inspection of the schools.

DR. H. D. CHAPIN said that the schools naturally received considerable attention in such a discussion as this, and so it might prove opportune for him to speak of what he had seen in his tour of inspection of the public schools. In one of the primary schools, which is crowded with children, there is no place whatever provided for the children's clothes, and they are, therefore, compelled to pile them up on the back seat. When it is remembered that these garments are often wet, and that they belong to children coming from the dirtiest and poorest tenements, it was easy to understand how readily this custom favored the spread of infectious diseases.

DR. L. EMMETT HOLT spoke of the preventive measures which had been adopted in two institutions with which he was connected, and which had proved most efficient. In one of these, the New York Infant Asylum, where there were upwards of two hundred children under two years of age, sporadic cases of diphtheria had occurred every three or four months during the past three years, but in every suspicious case, prompt individual quarantine has been adopted, the child's clothing has been removed from the ward, the ward has been fumigated, and the walls washed with bichloride solution, the bedsteads have been washed with carbolic acid solution, 1 to 40, and the bedding has been steamed. The throats of the children in the ward who have been exposed are examined twice a day, and if there be much nasal discharge, nasal syringing is at once begun. As a result of these prophylactic measures, not a single *epidemic* has occurred during this period.

CORRESPONDENCE.

NEW ORLEANS.

THE fifty-seventh annual commencement exercises of the Medical Department of the Tulane University of Louisiana were held at the Grand Opera House of this city on Wednesday, April 1st. Judge W. W. Howe was the orator of the day, and delivered an able address, dwelling especially on the relation of the physician to the law and sanitation. The dean, Dr. S. E. Chaillé, made his report to the president of the University. The medical department had 405 matriculants this year, this being the largest number in the history of the University. There were 105 graduates in medicine and 13 in pharmacy.

Dr. C. D. Owens, President of the Louisiana State Medical Society, has called the annual meeting in New Orleans for May 13th. The Society was to have met last May in Baton Rouge, while the Legislature was in session, with the hope of having a bill passed for the regulation of the practice of medicine in this State. On account of the extensive overflows no meeting was held, but a sub-committee was appointed to prepare a bill for the Legislature. This bill passed one branch of the Legislature, but was defeated in the other by the homœopaths and a few regular physicians whose motives have never been known. The Society will renew its efforts, and it is hoped that we will soon have a State Board.

The profession here do not take much interest in the State Society. Few of them attend its meetings, even when they are held in New Orleans. The only medical society in New Orleans suffers in the same way. There are about 210 regular physicians in New Orleans, many of whom are members of the New Orleans Parish Medical Society, and yet it is seldom that there are more than fifteen members present at its meetings, which are held once a month. Such a state of affairs should not exist in such a medical centre as New Orleans, yet it does exist, and those members of the profession who are best able to remedy this evil seem to take the least interest in it.

MONTREAL.

SINCE my last communication lymphomania has affected us about as badly as it has other communities. While the precious liquid was unobtainable the excitement continued quite active, both among the laity as well as among the profession. In November two of our younger medical men hurried off to Berlin, well laden with letters from the Governor-general, Consul, Board of Health, and others, to be early in the field. A good deal of lay advertising had to be submitted to, in connection with this trip. On December 19th the first supply of paratoloid reaching Canada was put in use in the Montreal General Hospital. Selected cases, of skin, joint, and internal tuberculosis, were subjected to careful treatment and close observation. Alas for human hopes, in three months the treatment is abandoned as unsatisfactory and dangerous. The following are some of the sadly-interesting results reported at a recent meeting of the Medico-Chirurgical Society by Professor Roddick, the chief surgeon of the hospital: A patient, who had derived great benefit from cauterization of the interior of

the bladder through a supra-pubic cystotomy, remained in the hospital with trouble in one testicle; after a few injections of tuberculin the other testicle, apparently normal, or, at least, quiescent up to this time, showed signs of irritation, and went on to disorganization, requiring its removal. The bladder was unaffected by the injections. A child, with incipient knee-joint disease, could walk when first injected; very soon the joint gave great trouble, a destructive action made rapid progress, and the knee had to be excised. In the case of a man with tarsal bone disease of limited extent, under tuberculin therapy the trouble manifestly and rapidly extended, and the loss of the foot was the disastrous result. A case of lupus of the face of long standing, in a girl of eighteen years, was pronounced worse than before the injections. With such lamentable possibilities, he would be a rash man indeed who would use the fluid in private practice.

From the medical side of the hospital the reports are unsatisfactory, though not clearly bad.

This week our medical schools close for the session, and with the incoming month a large number of young medicos are let loose on the community. The following are the numbers of the medical graduating classes of 1891: McGill University, 49; Montreal School of Medicine, 24; Laval University, 13; Bishop's College, men, 3; women, 1. We thus have the first woman graduate of the province this year. The lady in question, Miss Ritchie, B.A., has had a brilliant training, having previously taken the honors course in art at McGill. As yet, old McGill gives no invitation to female professional students, the authorities of the University being opposed to co-education even in arts. Up to this time our city can only boast of one recognized female practitioner of medicine, a graduate of the Women's Medical School of Kingston.

Dr. E. H. Trenholme, the well-known gynecologist, on account of ill health, has had to remove to the more congenial climate of the Pacific Slope. This gentleman was a daring and original operator, and a physician of marked individuality. He constantly asserted his claim to be the author of Tait's operation, on the strength of an early reported successful case. This priority was acknowledged by Battey and some others.

Prof. George Ross, sub-dean of McGill, has been unable to fill the chair of practice this winter; his lectures, having been prepared, were delivered for him by other members of the faculty. Dr. Ross has found it necessary to limit himself, for the present, to consultation practice.

CHICAGO.

The twenty-first annual commencement exercises of the Woman's Medical College were held at Central Music Hall on March 30th. The degrees were conferred by Professor I. N. Danforth. The graduating class numbered 30. Two of the graduates, Drs. Maggie L. McCrea and Emma White, were appointed internes at the Woman's Hospital of this city. Dr. Blanche Denig, another graduate, received the appointment of interne to the New England Hospital, Boston, and Dr. Anne McFarland has been appointed superintendent of the Oaklawn Retreat, Jacksonville, Ill.

At a meeting of the Alumni Association in the evening, a bust of the late Professor William H. Byford was formally unveiled. It is life-size, and of Carrara marble. It is the handiwork of Lorado Taft. The bust presents a faithful likeness of the late Professor. Dr. M. J. Mergler made the dedicatory address.

The effort that has been made here to organize and build a hospital for the exclusive use of the colored people has kindled a flame of righteous indignation amongst the people of that race. The colored people are opposed to such a sectarian institution, for the reason that it encourages and keeps alive race prejudice, and they consider it in direct opposition to the spirit and genius of our American form of government. They say that the patients and inmates of the hospitals and benevolent institutions of this city are all treated alike, irrespective of race, color, nationality or religion, and why encourage the inauguration of such a movement?

An institution, to give instruction in medicine and surgery, to be known as the Illinois School of Medicine, was recently incorporated, with a capital stock of $10,000. The incorporators are physicians.

The annual commencement exercises of Rush Medical College took place March 31st, in the presence of a large audience, a class of 204 graduating, the largest in the history of this famous institution. A palpable cloud rested upon the faculty and class—the knowledge that a beloved associate and instructor lay dead in his darkened home, subduing every heart and softening the accent of every lip. The sudden death of Dr. Charles T. Parkes was a severe blow to "Rush," and it fell with added force, following so close upon the deaths of the President, Dr. James Adams Allen, Dr. Joseph P. Ross, and Dr. William H. Byford, all members of the faculty, who have died within this college year.

The ninth annual commencement exercises of the College of Physicians and Surgeons of this city were held March 24th. Professor S. A. McWilliams conferred the degrees. The graduating class numbered 42.

The Alumni Association of the College of Physicians and Surgeons held a special meeting recently with reference to reinstating Dr. W. C. Brinkerhoff. Two years ago Dr. Brinkerhoff was dropped from the membership of the Alumni Association for advertising in the daily papers special qualifications in the treatment of specific diseases. A year later he made application for a hearing before the Alumni with the object of eventual reinstatement. A hearing was granted, and the doctor and his friends, it is said, endeavored to convince the majority of the Alumni that there was no violation of the code of ethics, by a simple announcement in the press of the diseases which he felt qualified to treat. After considerable discussion, a vote on the motion to take up the application for reinstatment disclosed 13 against and 2 for it, 20 members declining to vote.

La grippe has been very prevalent here. At the Alexian Brothers' Hospital every ward is full, and several patients were turned away because of the lack of room. At the German Hospital, out of seventy patients, over one-third are suffering from *la grippe*. Out of the eight house physicians, six are unable to attend to their duties, and several of the nurses are too sick to be at their posts. St. Joseph's Hospital has accommodations for seventy-five, but here, as at other places, everything is crowded. At the Presbyterian Hospital much the

same condition of affairs exists. Out of one hundred or more patients, about twenty-five are *la grippe* sufferers, and a large percentage of the employés are under the care of physicians. At the Illinois Training-School for Nurses twenty-two persons are down with the prevailing malady. The county hospital is probably the most overcrowded of any of these institutions. Out of 350 or more medical patients, at least one-third are suffering from throat and lung troubles. The hospital is more than overcrowded, but patients are still received, an average of seven a day, and there is not a ward in the medical department which has not from fourteen to fifteen patients on the floor. There are fully 150 more patients at this institution than the hospital is intended to accommodate, but so long as the epidemic continues, an effort will be made to care for all, if possible.

According to the Health Office report the weekly mortality up to March 21st, from throat and lung troubles, was unusually large. Pneumonia caused the deaths of 170, bronchitis 81, diphtheria 23, and *la grippe* 19. This would indicate that outside the hospitals the disease is proving much more fatal than in them. Consumption carried off 46, making a grand total of 339 deaths during the week from bronchial and pulmonary troubles.

ST. LOUIS.

The annual summary of mortality of the City of St. Louis, which has just been issued by the Health Department, contains some interesting data.

The annual death-rate is given at 18.45. The total number of deaths reported is 8407, 405 more than the previous year. The mortality from different causes is distributed as follows, viz.: Total from zymotic diseases, 1547; from constitutional diseases, 1635; from local diseases, 3781; from developmental diseases, 969; from violence, 476; unknown, 1. There were 186 deaths from diphtheria; 140 from typhoid fever; 436 under five years old; and 104 above that age from diarrhœal diseases. 843 deaths are attributed to phthisis; 336 to marasmus, tabes mesenterica, and scrofula; 601 are referred to pneumonia; 332 to bronchitis; 469 to diseases of the circulatory system; 207 to meningitis and encephalitis; 444 to convulsions and trismus; 399 to other diseases of brain and nervous system; 230 to enteritis, gastritis, etc.; 253 to Bright's disease and nephritis.

4611 were male, and 3796 female; 3115 were under five years of age.

11,564 births were reported during the year, of which 704 were stillbirths.

The competitive examination for appointments as resident physicians in the City and Female Hospitals called out applicants from the several colleges as follows, viz.: St. Louis Medical College, 9; Beaumont Hospital Medical College, 6; Marion Sims Medical College, 3; Missouri Medical College, 4; St. Louis College of Physicians and Surgeons, 1. The following are the successful competitors, viz.: H. H. Born, H. W. Buvig, C. J. Orr, J. J. Seibold, J. A. J. James, W. H. Fuchs, J. H. Bell, J. P. Stock, H. D. Brandt, F. S. Haeberle, and E. C. Runge. Seven of these were from the St. Louis Medical College, three from the Beaumont Hospital Medical College, and one from the St. Louis College of Physicians and Surgeons.

The Missouri Medical College held its "Golden" (50th) commencement exercises Tuesday Evening, March 31st, and issued diplomas to ninety-four students who had completed their course and passed their examinations.

La grippe has visited our city in a very mild form this winter. There have been a good many cases, but most of them have been mild in their character, and the mortality has been very low, very different from that which has been experienced in Chicago.

Governor Francis has recently made two appointments to membership in the State Board of Health to fill vacancies caused by death, viz., John P. Harmon, of Johnston County, vice Wm. Gentry, deceased, and Dr. R. C. Atkinson, of St. Louis, vice James B. Bather, deceased; both appointments being for a term expiring July 2, 1892. Dr. R. C. Atkinson is at present a member of St. Louis Board of Health, having been appointed by Mayor Francis about four years ago.

I was about to call the attention of your readers to the recent failure of the attempt to secure the passage of a bill, introduced into the Legislature, for the purpose of requiring a three years' term of college work as a requisite for registration as a qualified practitioner of medicine in this State, when I learned that a full statement of the case had been prepared by Dr. C. A. Todd, who was an active member of the committee who had charge of the preparation of the memorial to the Legislature.

It is the earnest wish of the largest part of the teachers and other medical practitioners in this city and State, that it should be clearly understood where lies the responsibility for the recent failure to take an advanced position in medical education, which is desired by a large majority of the profession here.

LONDON.

Dr. Broadbent on Fatty Degeneration of the Heart; Dr. Thomas Oliver on Lead Poisoning.

The Lumleian Lectures annually delivered before the Royal College of Physicians by one of the senior Fellows, this year fell to the lot of Dr. Broadbent, who took Structural Diseases of the Heart for his subject. What he had to say about fatty degeneration may probably be of some interest to your readers. Deficient blood-supply through disease of the coronary arteries or from other cause he regarded as the most common and most important mode of causation, the atrophy of the muscular fibre thus produced being followed by the invasion of the fibre with fatty granules. Defect in the quality of the blood-supply, the quantity being unaffected, will also produce it, as shown in advanced stages of pernicious anæmia and in severe cases of typhoid fever; the heart in these affections suffers more than the voluntary muscles, because of the constant wear and tear to which it it is subjected. Diabetes and alcoholic excesses may produce fatty degeneration, either by impoverishment of the blood, or perhaps by myocarditis. Cases in which no causation can be made out may be ascribed to a defective assimilative action in the muscles of the heart, or possibly some unrecognized blood condition.

The symptoms at first may be those of dilatation, but in complicated cases dropsy is rare; the effect of the disease is defective pressure in the venous system, and

consequently syncopal, apoplectic and epileptic attacks are characteristics of the later stages. The syncopal attacks do not go on to complete loss of consciousness, but they generally last long, and are accompanied by coldness of the extremities and body surfaces. In the apoplectiform attack the patient is perhaps unconscious, with stertorous breathing, but examination of the pulse and heart will show the entire absence of sufficient tension to cause rupture of a vessel, and this will constitute the best means of recognizing the true nature of the attack; there may be transient loss of power on one side of the body; the patient is never quite the same after one of these attacks, and has increased liability to subsequent syncopal attacks. The epileptiform seizures are generally of the nature of *petit mal*, and are probably dependent upon the defective cerebral circulation from heart failure, the pulse in these cases sometimes being as low as 40. Dr. Broadbent does not believe in the greasy skin and sallow complexion traditionally associated with fatty degeneration; he has often seen patients maintain every appearance of health up to the last.

The most constant and significant feature of the pulse is that it is short and unsustained. It may vary much as to frequency, the most characteristic form, but, at the same time, the most rare is a very slow pulse, with extreme low tension. The impulse of the heart cannot, as a rule, be perceived, and the sounds are inaudable, or very weak, the first sound being short. If there is a doubt as to whether the signs are due to functional or organic disturbance, to subject the patient to slight exertion will probably suffice to solve the problem. If the heart is sound it rises to the occasion, the pulse, heart-beat, and sounds becomes more distinct, stronger, and more regular, whilst the fatty heart "goes to pieces," and the pulse becomes irregular, and shorter than ever, or may even disappear. If the diagnosis is certain, a fatal termination is merely a question of time and circumstances, on which latter, however, much will depend. The patient should have as much sun and fresh air as possible, but must not be exposed to severe cold. Exercise is good for him, but not exertion. His diet must be simple, and his meals regular, and constipation must be avoided.

Dr. Thomas Oliver has recently delivered the Gulstonian Lectures before the same body. He chose "Lead Poisoning" for his topic. He has contributed not a little to the elucidation of this subject in recent years. He says that the first effect of lead upon the system is to interfere with the function of the making of blood, and he has never in any case of lead poisoning failed to find a deficiency in the number of red blood-corpuscles. He regards swelling and ulceration of the gum as the necessary precursor of the blue line; it is more constant and more marked in the lower than in the upper jaw. He also finds that three months is about the time required for its disappearance after the patient is removed from all source of lead poisoning.

His views on the subject of lead paralysis are of special interest; after discussing the neuropathic theory he gives his decision against a peripheral origin, and in favor of a primary lesion in the cord. That this has hitherto escaped detection he explains on two grounds: one, that in the early stages the changes must be slight, sufficient time not having elapsed for them to develop; and, secondly, that so many patients recover. The paralysis attacks functionally related groups of muscles, and the precise parts of the cord in which the centres for these groups are situated is unknown, and must be very small, so that the detection of any lesion of it might easily escape.

Sir Andrew Clark has just been elected for a fourth time President of the College of Physicians, by an almost unanimous vote. He has well deserved the compliment, for he has been most zealons in the discharge of all the duties of his office, even going the length last summer of coming down from Scotland in the middle of his holiday in order to preside at a lecture which has always been delivered in the middle of August. He has done very good work outside the college, too, on behalf of the profession at large, in fighting in the cause of the army medical officers, and though his efforts have not been crowned with complete success, there is no doubt that many of the concessions recently made were owing to his powerful advocacy.

There is not much news in the world of medical politics; the scheme for reconstituting the University of London is still being considered by the senate of that body, but it is more than likely that they will not be able to find a compromise that will satisfy all the contending parties, in which case steps will be presumably taken to form a new university for London students, so it will be some years yet before we can get an accessible degree.

NEWS ITEMS.

A Hospital for Students in Vienna.—A hospital will soon be opened in Vienna especially to accommodate sick students. It has been established by the Students' Association, and contains thirty-eight beds—eight of which are for surgical cases, and nine others, in an isolated pavilion, are for cases of contagious disease. The attending physician is Dr. Redsenbacher.

Rush Medical College, Chicago.—To supply the place made vacant by the death of Dr. Charles T. Parkes in Rush Medical College, the faculty have elected as Professors of Surgery and Clinical Surgery Professor Roswell Park, of the Buffalo Medical College, and Dr. N. Senn, of Milwaukee, Wis. Dr. Park is expected to move here in a few days, and Dr. Senn has already taken up his residence here and is going to remain permanently. Dr. Daniel R. Brower has been elected Professor of Materia Medica and Therapeutics, in addition to the Chair of Mental Diseases, which he already holds. Dr. Sanger Brown has been elected Professor of Hygiene and Medical Jurisprudence. Drs. H. N. Moyer, J. B. Herrick, and J. H. Salisbury have been elected Adjunct Professors of Medicine; and Dr. Charles Warrington Earle Adjunct Professor of Obstetrics and Diseases of Children.

Just as we go to press we have a note from Dr. Park, in which he says that he has declined the election to the Professorship of Surgery in Rush Medical College of Chicago.

A German Medical College in Chicago.—It is said that Chicago is to have a new institution known as the

German College of Medicine and Obstetrics, with a capital stock of $50,000. The college will have ten professors, four to teach in the English language and make a specialty of obstetrics; the other professors will teach in German and have charge of the regular college course. Five years of study will be required before a diploma is granted. It is thought that eventually a college building will be erected near Humboldt Park. The money required will be provided by the incorporators and by the professors who are to occupy the chairs in the college. The professors have not yet been selected.

Milwaukee.—The Milwaukee Clinical Society has changed its name to that of the Milwaukee Medical Society, and is endeavoring to enlarge the scope and membership of the Society. It has elected Dr. S. W. French as president, Dr. U. O. B. Wingate as secretary, and a board of thirteen councillors, who have the general management. It will hold two meetings per month, on the second and fourth Tuesdays, except the months of July, August and September.

Obituary.—DR. WILLIAM C. HUNT, another old practitioner of Chicago, died on March 1st. He had been ill for more than two years, and was a classmate of Dr. Johnson. He was born at Litchfield, Conn., November 8, 1827, and went to Chicago at the age of twenty-one years. He attended Rush Medical College, from which he was graduated in 1851, afterwards becoming a member of the faculty of that institution.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM APRIL 14 TO APRIL 20, 1891.

By direction of the Secretary of War, the following changes in the stations of medical officers are ordered: MARSHALL W. WOOD, *Captain and Assistant Surgeon*, is relieved from duty at Fort Meade, South Dakota, and will report in person to commanding officer Fort Preble, Maine, for duty at that post, relieving William B. Davis, Captain and Assistant Surgeon. Captain Davis, on being relieved by Captain Wood, will report in person to the commanding officer Fort Clark, Texas, for duty at that station.—Par. 11, *S. O. 85, A. G. O., Washington*, April 15, 1891.

By direction of the Secretary of War, a Board of Medical Officers, to consist of: HENRY MCELDERRY, *Major and Surgeon;* JAMES C. MERRILL, *Captain and Assistant Surgeon;* and W. FITZHUGH CARTER, *Captain and Assistant Surgeon*, is appointed to meet at West Point, N. Y., May 1, 1891, or as soon thereafter as practicable, to examine such cadets of the U. S. Military Academy as have been granted leave of absence until that date on account of physical disability, and to report upon their physical fitness to continue with the Corps of Cadets.—Par. 2, *S. O. 83, A. G. O., Washington*, April 13, 1891.

By direction of the Acting Secretary of War, leave of absence for six months, on surgeon's certificate of disability, is granted PASSMORE MIDDLETON, *Major and Surgeon.*—Par. 4, *S. O. 81, Headquarters of the Army, A. G. O.*, April 10, 1891.

By direction of the Acting Secretary of War, the leave of absence granted HENRY P. BIRMINGHAM, *Captain and Assistant Surgeon*, in S. O. 39, March 13, 1891, Department of the Columbia, is extended one month.—Par. 2, *S. O. 81, Headquarters of the Army, A. G. O., Washington*, April 10, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING APRIL 18, 1891.

BEARDSLEY, GROVE S., *Medical Director.*—Appointed a delegate to represent the Medical Department of the Navy at the meeting of the American Medical Association at Washington, D. C., May 5th.

FLINT, JAMES M, *Surgeon.*—Appointed a delegate to represent the Medical Department of the Navy at the meeting of the American Medical Association at Washington, D. C., May 5th.

GRIFFITH, S. H., *Passed Assistant Surgeon.*—Detached from the U. S. S. "Dolphin," and granted one month's leave of absence from date of detachment.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE TWO WEEKS ENDING APRIL 18, 1891.

BAILHACHE, P. H., *Surgeon.*—To represent the Service at the annual meeting of the California State Medical Society, April 8, 1891. Detailed as Chairman of Board for the Physical Examination of Officers Revenue-Marine Service, April 14, 1891.

VANSANT, JOHN, *Surgeon.*—Detailed as Chairman of Board for Physical Examination of Officers Revenue-Marine Service, April 14, 1891.

AUSTIN, H. W., *Surgeon.*—Detailed as Chairman of Boards for Physical Examination of Officers and Candidates Revenue-Marine Service, April 14 and 15, 1891.

GASSAWAY, J. M., *Surgeon.*—Leave of absence extended five days, April 15, 1891.

STONER, G. W., *Surgeon.*—To proceed to Alpena, Mich., on special duty, April 12, 1891.

MCINTOSH, W. P., *Passed Assistant Surgeon.*—Detailed as Recorder of Board for Physical Examination of Officers Revenue-Marine Service, April 14, 1891.

MAGRUDER, G. M., *Passed Assistant Surgeon.*—Detailed as Recorder of Board for Physical Examination of Officers Revenue-Marine Service, April 15, 1891.

PERRY, T. B., *Assistant Surgeon.*—Ordered to examination for promotion, April 6, 1891.

WOODWARD, R. M., *Assistant Surgeon.*—Ordered to examination for promotion, April 6, 1891.

GOODWIN, H. T., *Assistant Surgeon.*—Ordered to examination for promotion, April 6, 1891.

VAUGHAN, G. T., *Assistant Surgeon.*—Ordered to examination for promotion, April 6, 1891.

GEDDINGS, H. D., *Assistant Surgeon.*—Detailed as Recorder of Board for Physical Examination of Officers and Candidates Revenue-Marine Service, April 14, 1891.

PERRY, J. C., *Assistant Surgeon.*—Detailed as Recorder of Board for Physical Examination of Officers Revenue-Marine Service, April 14, 1891.

GROENEVELT, J. F., *Assistant Surgeon.*—To rejoin station (New York), April 13, 1891.

ROSENAU, M. J., *Assistant Surgeon.*—To proceed to Cairo, Ill., for temporary duty, April 13, 1891.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication, or 250 reprints will be furnished instead of payment, provided request for reprints be noted by author at top of manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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ORIGINAL ARTICLES.

FEL BOVIS INSPISSATUM—ITS IMPORTANCE AND USES AS A THERAPEUTIC AGENT.[1]

BY WILLIAM HENRY PORTER, M.D.,

PROFESSOR OF CLINICAL MEDICINE AND PATHOLOGY AT THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL.

THIS old-time remedy, ox-gall, appears to have been sadly neglected in the mad rush for new remedies. Frequently it is omitted by writers upon therapeutics, while others grant to it only a passing notice. Yet, it is still retained in the pharmacopœias of the United States, Great Britain, Germany, etc., as one of the medicinal agents that can be used to relieve the sufferings of the human race.

In my experience it is one of the most valuable remedies that we have at our command. Without ox-gall it would be almost impossible to treat successfully and satisfactorily that great class of maladies commonly described under the title of functional derangements of the digestive and hepatic system. With the hope of being able to bring to light some satisfactory results that can be attained with ox-bile, administered either alone or in combination, this article has been compiled.

Primarily it can be asserted that all abnormal or diseased conditions, either acute or chronic in character, are largely dependent upon an imperfectly effected digestion and assimilation; that, so long as the physiological nutritive vitality is perfectly maintained, very few diseases either acute or chronic can gain access to, or originate within, the system and develop sufficient power to make their presence manifest. But whenever the vitality is lowered, then the system is quite prone to take up extraneous and deleterious substances, and to develop all forms of acute and chronic diseases, the character and intensity of the infecting agent determining in a large measure the final result. To combat successfully these damaging effects, the digestion, the hepatic and nervous functions, must be raised to, or even carried beyond, the normal standard, so that the vital powers may be maintained until the infecting agent can be subdued and removed from the system. Having accomplished this, Nature is placed in a position in which she is capable of sustaining the bodily functions, and, at the same time, of repairing the damage to the various tissues and glandular structures, until finally the human economy again becomes normal.

Assuming, in the first place, that all forms of extraneous and poisonous substances which are introduced into or are developed within the system are carried to the liver, and there acted upon by the chemico-physiological transforming power of the protoplasmic masses composing the cells of that organ, it is quite easy to see and comprehend how derangement, faulty action, or even an absolutely pathological condition, of these cells is developed. Any one of these three conditions will disturb normal action on the part of the liver, and will tend to lower the quality of the bile produced. This imperfectly formed biliary fluid, on reaching the alimentary canal, will be unable to assist, as it should, the digestive functions of the intestine; and, as a sequence, fermentation is rapidly excited within the bowel, producing many deleterious products, which pass through the entero-hepatic circulation and reach the liver, thus increasing the work of an already overtaxed organ. This, together with the damaging effects of the original poison and imperfect oxidation, explains the chief factors in the development of increased bodily heat in connection with all diseased conditions. In this manner the process continues repeating its injurious effects upon the system, until Nature, by her inherent power, grants relief by destroying or eliminating the poisons, or is aided in so doing by the skilful administration of some medicinal agent. In a certain percentage of cases, however, both the inherent power of Nature and the skill of the physician are held in abeyance.

Taking this view of the situation, the first indication to be fulfilled in the treatment of disease is to rid the system as rapidly and easily as possible of its original, old, and deteriorated bile, and quickly replace it with some of a better quality that has been derived from a young and healthy herbivorous animal. This line of reasoning has led me to use the inspissated ox-bile very extensively during the past ten years—with this conclusion: that fel bovis inspissatum is indispensable in the treatment of almost every pathological condition. This is especially true in all individuals who have passed their prime and are in the decline of life. After this extensive use of ox-bile as a therapeutic agent in all kinds of disease, and upon all classes of patients, I feel

[1] Read before the Section on General Medicine, New York Academy of Medicine, February 21, 1891.

warranted in speaking with some degree of certainty in regard to its physiological action and therapeutic power.

It is hard, if not impossible, to give a complete picture of the physiological action of fel bovis. The function, however, of the bile in the physiological economy,[1] as we understand it to-day, if fully comprehended, covers the chief physiological action of fel bovis inspissatum. The changes, however, which its presence in the alimentary canal and the system in general causes, together with the therapeutic indications for its use, will enable us to appreciate what can be attained by its administration.

In Brunton's most valuable work this statement is found: "Bile precipitates pepsin, and interferes with the digestion of albuminous substances in the stomach. It seems to irritate the mucous membrane and give rise to headache and vomiting. It does not aid the digestion of farinaceous food. It quickens the absorption of fats; it prevents to some extent putrefactive changes in the intestinal contents, and it quickens peristaltic action." My experience is somewhat in opposition to some of these statements, but if we stop and analyze the subject carefully the difference will probably be found to be apparent rather than real.

There is no doubt that bile which is of impure quality, regurgitated from the intestines, will irritate the mucous membrane, precipitate pepsin, and even retard, rather than favor, digestion; but new bile which is good in quality will not, as a rule, irritate the stomach, and it very materially aids in the perfection of the digestive process, especially after the removal of the old and deteriorated bile. In case an unduly irritable stomach is encountered, the distress which might be attributed to irritation arising from the presence of newly-administered bile in the stomach, can easily be prevented by adding one grain of cocaine to each capsule containing the fel bovis. My observations and clinical cases, which are not few, strongly favor the assertion that newly-acquired bile is not irritating to the gastric mucous membrane, and does very materially augment the digestive process effected in the stomach.

The first principle, however, in the treatment of all abnormal physiological conditions must not be forgotten, namely, that the old and useless bile must first be forced out of the system.[2] When this has been accomplished, the system is placed in a position to accept, utilize, and be benefited by a new supply of bile of improved quality. That the digestive and nutritive functions of the body are augmented is shown by a marked improvement in the general condition of the patient and by positive changes in the composition of the urine.

[1] THE MEDICAL NEWS, January 24, 1891, p. 90.

[2] Ibid., February 28, 1891, p. 245.

First. In a well-defined abnormal case, before ridding the system of its old bile and substituting a new supply, the amount of urine is usually found to be scanty, high-colored, hyper-acid, and of high specific gravity, ranging between 1025 and 1035. The amount of urea is decidedly diminished in quantity, with an excessive amount of uric acid, urates, or oxalates, and it often contains bile-pigment and biliary salts. Owing to the large quantity of uric acid such a sample will remain acid in reaction for days, weeks, or months, before alkaline fermentation is developed. When this does occur the products of its fermentation will be ammonium carbonate, free ammonia, carbon dioxide, ammonium urate, and the ammonio-magnesium phosphate crystals, together with a more or less complete disappearance of the uric acid crystals.

Second. Where the abnormality is less marked and the digestive and assimilative functions are more perfectly performed, but are not yet normal, the time elapsing between the discharge of the urine and the development of the alkaline fermentation is shorter. The duration of the acidity varies with the degree of the digestive and hepatic disturbances. The urine is less likely to contain bile than in the former case. The products of the alkaline fermentation are practically the same as in the former instance, excepting the formation of ammonium urate, which is usually absent.

Third. After expulsion of the old bile and the introduction of the new and improved ox-gall, the flow of urine becomes more abundant and normal in quantity, lighter in color, less acid, of lower density, and contains a larger percentage of urea with a corresponding diminution in uric acid, urates, and oxalates. When the normal standard is reached, the urine will change from its faintly acid reaction to that of alkaline fermentation in from twenty-four to forty-eight hours. The products of fermentation will now be what may be called normal, namely, ammonium carbonate in abundance, free ammonia, carbon dioxide, and an excessive amount of crystals of ammonio-magnesium phosphate.

By this method of prolonged study of the urine, we are enabled to determine with a wonderful degree of accuracy the perfection of the digestive, hepatic, and assimilative processes of the body. From its results we can tell whether our patients are improving in their nutritive condition or whether they are losing ground, no matter what symptoms may be presented. By it we have, as it were, a perfect key to the working of the chemico-physiological laboratory of the system. With these physiological laws in mind we are in a position to appreciate what can be accomplished by the internal administration of the fel bovis inspissatum. In fact, all the good that

can be obtained from the use of the bile must come from its action upon the digestive, hepatic, and assimilative functions of the body.

The administration of ox-gall is indicated under all circumstances where there is a faulty digestive action, poor nutrition, and abnormal urine. It should always be administered in the form of a capsule, which should contain from two to five grains of the inspissated bile, the former being the preferable dose, either alone or in combination with other medicinal agents.

When taken in this form it temporarily retards the flow of hydrochloric acid from the gastric mucous membrane, and stimulates a more copious discharge of a more active milk-curdling ferment. This temporary decline in the acid constituents of the gastric juice gives time for the milk-curdling ferment to precipitate the casein in the form of fine feathery flakes. When the acid and peptic secretion is reëstablished by the irritation of the precipitated casein there results a more rapid and perfect peptonization in the stomach of this proteid of the milk.

The truth of these statements can easily be demonstrated by administering some capsules containing ox-gall to an individual who cannot under ordinary circumstances digest milk, when he will cease to throw off the tough, leathery curds of precipitated casein, which he previously did. If an emetic is administered after a suitable time has elapsed since the ingestion of the milk, preceded by the fel bovis, the precipitate in the stomach is found to be composed of fine feathery particles, in which form it is most rapidly acted upon by the peptic ferment.

Ox-bile also stimulates a more active flow and an improved quality of pepsin, as is shown by the more rapid and perfect digestion in the stomach of all the different kinds of proteids. By producing this perfect peptonizing action upon the proteids in the stomach the amount of work to be accomplished by the pancreatic and intestinal juices is considerably decreased and a more perfect digestion of the remaining food-stuffs, which have reached the intestinal canal in an undigested state, will take place.

A certain amount of the bile which has been administered *per os* passes through the stomach into the intestinal canal and there helps in the digestion of all food-stuffs. It now takes the place of the biliary fluid which the liver is not capable of producing, or of the old and imperfect bile which has or ought to have been expelled from the system by a cholagogue cathartic. Once in the intestine, we are justified in saying that this newly-acquired bile decidedly aids in the diastatic and peptonizing actions which are completed at this point, and is a mighty factor in rendering the nutritive pabulum more thoroughly diffusible. It also prevents decomposition, and decreases in a large measure the amount of effete or poisonous elements that can be taken up with food-stuffs to the liver. In this manner a certain amount of irritative matter is prevented from gaining access to the system, and to that extent the amount of work imposed upon the glandular structures of the body is reduced.

The newly-added bile further acts as a natural stimulant to the muscular coat of the intestine as a whole, thus causing the general peristaltic action to be increased. Again, some of the ingredients of the bile stimulate the small muscles of the villi, and greatly augment the activity of their contained lymphatic vessels,[1] causing them to pump the fat more rapidly through and out of the epithelial cells —which form the external covering of the villi—and to discharge it into the deeper lymphatics, to be carried on to the general circulation.

It also stimulates the alimentary secretions, which help to lubricate the intestinal surface, favoring a more natural and easy onward movement of the contents of the gut, thereby tending to prevent or overcome any existing constipation.

The bile also stimulates the vital activity of the epithelial cells lining the alimentary tract throughout, and by so doing causes them to absorb more rapidly all food-stuffs which have been converted into a diffusible pabulum ready for absorption, discharging the peptones and glucose easily and quickly into the entero-hepatic circulation, while the fats pass through the lacteals to finally reach the circulation at the origin of the left brachio-cephalic vein.

By converting all the food-stuffs into a thoroughly and easily diffusible fluid, by decreasing to the minimum the products of intestinal fermentation, and by stimulating the activity of the gut in this way, we have produced a condition which favors the most rapid absorption attainable, with the least expenditure of force, and, as a result, there is carried to the liver and system at large a completely digested intestinal product—a nutritive pabulum which contains the smallest possible amount of effete or deleterious matter.

With this nutritive fluid a certain amount of the newly administered bile is also carried to the liver, where it is seized upon by the hepatic cells, and a portion retransformed into biliary fluid, which again reaches the alimentary tract by the natural channel. The balance, by its presence in the liver, aids very materially in those chemico-physiological transforming actions which are so extensively carried on by the protoplasmic elements constituting the hepatic cells. As a sequence of this phenomenon

[1] The Medical News, January 24, 1891, p. 90.

we have discharged from the lobules of the liver into the hepatic system of vessels a more perfect nutritive pabulum, and one that is almost entirely free from extraneous or poisonous matter—a nutritive fluid that can be quite easily utilized for the growth, development and maintenance of the body tissues, and for the support of the secretory and excretory glandular structures. All this is accomplished with a small total expenditure of oxygen, provided that the food-stuffs taken are chiefly of the CHNOS group; and at the same time there is formed, to be eliminated from the system by the excretory organs, the most complete products of tissue-waste, namely, urea, carbon dioxide, and water. This naturally decreases to a very marked degree the excretory strain upon the glandular organs, which have for their function the task of removing from the body waste products resulting from the chemico-physiological transformations produced as the result of vital action.

But one thing can follow such a chain of events, and that is a more or less rapid restoration of all parts of the body to a normal physiological standard, with a disappearance of all abnormal symptoms; in fact, a complete cure of whatever diseased condition may have existed at the time treatment was instituted.

In the light of this knowledge, ox-bile becomes one of the most potent, if not the only true, physiological antipyretic agent at our command. This statement is especially true as regards typhoid fever, and in all those diseases in which intestinal irritation is marked. In all infectious diseases, where some poison has been introduced into the system, either in the form of a microörganism, ptomaine, leucomaine, toxine, or some unknown quantity, the first deleterious effect of the infecting agent is to disturb the functions of the liver and of its bile-producing power, as evidenced by the coated tongue, the primary constipation, the clay-colored stools, the high-colored acid urine of high density with a diminished quantity of urea and an increased amount of uric acid, urates and oxalates—all of which indicate incomplete digestion and imperfect or excessive oxidation, and an impaired nutrition.

While ox-bile may not be able to kill the original germ or destroy the ptomaine, leucomaine, or poison which is producing the specific disease, it does furnish to the system a new supply of a very necessary agent, and one which the animal economy, by its own inherent power, is not capable of producing, and without which the bodily functions cannot be perfectly performed. The fel bovis prevents intestinal fermentation, improves the digestive act, and decreases the amount of damaging material which can be absorbed from the lumen of the gut. It also increases the total amount of the nutritive pabulum which is to be carried into the system.

With the absorption of food-stuffs a certain quantity of this newly-introduced bile is also carried to the liver, and very decidedly aids in the action of the hepatic cells, all of which tends to reduce irritation, improve oxidation, assimilation, and the nutritive powers throughout the system. When this has been accomplished the animal economy is capable of destroying or removing the original poison which, before this, tended to multiply and become more intense in its action.

In this way the bile becomes a truly antipyretic agent and decidedly lowers bodily temperature; but while it may not be able to completely reduce the temperature, it nevertheless keeps it within living bounds, sustains the vitality of the system until the disease has run its course and has been eradicated from the body. It will not cure the disease, but it will very decidedly shorten the duration and diminish the intensity. Another good effect from the action of ox-bile in the treatment of typhoid fever is the small amount of tympanites present after its use. It also diminishes diarrhœa, and the cerebral symptoms are milder under its influence. There is also noted a more copious flow of urine, more urea, less uric acid, urates, and a diminished liability to albumin or casts.

For the past few years several of my colleagues have been following this plan of treatment with me, and so far there has not been a single death among our typhoid patients. The duration of the disease has been shorter and the attack milder as compared with many that we have seen in the past. This favorable showing has been limited to a small number of cases, not more than fifty in all. If carried into the hundreds it may be found to give no better results than many other lines of treatment; but theoretically, and from the results so far obtained in the practical line, and from its being in keeping with well-established physiological laws, it ought to continue to yield good results in the majority of instances. In so far as ox-bile prevents intestinal fermentation and improves nutrition, it will lower the temperature in all febrile conditions.

In the treatment of nephritic diseases it is the chief agent to be relied upon to enable the system to improve the digestive and hepatic action and the nutrition at large, and that of the kidney protoplasm in particular. By establishing a more perfect assimilation throughout the body, it very decidedly decreases the amount of excretory work to be accomplished by the renal epithelial cells. This achieved, the albumin and casts disappear from the urine and the renal excretion returns to a perfectly normal standard. The rapidity with which this change can be effected is almost beyond comprehension. The renal lesion is cured, physiologically speaking, although the kidney remains irreparably

damaged from a purely histological standard. This distinction between a physiological and a histological cure has been too often overlooked, and many diseases are classed as incurable because the pathological condition cannot be completely eradicated, while the damaged organ can be made to perfectly perform its functions and remove every trace and symptom of disease from the system.

To enumerate all the good that can be accomplished by proper feeding and the internal administration of ox-bile would be tedious. Enough has been given to fully illustrate the physiological principle of the action of fel bovis, which can easily be applied to a greater or less degree in dealing with all kinds of pathological problems.

One more action and use, however, must not be forgotten in connection with ox-bile, and that is its great power and activity in softening and removing fæcal matter from the colon, in connection with chronic constipation or where impaction has occurred. The fel bovis alone, or perhaps better in combination, as in the following formula, will soften and remove quite effectually impacted fæces and stimulate the lower bowel to action when all other means have failed. It is also a very powerful agent for bringing away the gas and relieving troublesome tympanites:

℞.—Inspissated ox-bile	. . .	℥j.
Glycerini	. . . . .	℥iv.
Ol. ricini	. . . . .	℥ij.
Aquæ	. . . q. s. ad	℥viij.—M.

Sig.—This added to a pint, or better still, a quart of warm soapsuds; the larger amount can be retained when slowly injected into the lower bowel.

After several copious injections have been administered and retained for a time and have come away without producing the desired effect, we are justified in assuming that the colon is free. This has been verified with sufficient frequency in the dead-house to warrant the statement that it will invariably soften and remove fæcal matter from the colon. Of course, excepting a tight stricture of the colon or an occlusion of the lumen of the gut, which cannot be passed by the enema.

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TWO CASES OF EMPYEMA.

By G. R. TROWBRIDGE, A.M., M.D.,
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In The Medical News for February 21, 1891, Dr. Goggans has a most interesting and practical article on the "Surgical Treatment of Empyema," and if not trespassing too much, I would like to supplement his article with a rather meagre, I regret to say, report of two cases of empyema, which came under my care while resident physician in the Rochester (N. Y.) City Hospital.

I shall be obliged to give the histories of the cases from memory, as I have no data at hand; but both cases were so forcibly impressed on my mind that, although I shall not be able to give minute facts, yet I can give enough of a general outline of each to illustrate my point, viz.: the result of prompt surgical interference in one case, and the result of no such treatment in the second:

Case I.—Male, Italian, about thirty-five years of age. Was admitted with a history of having caught cold; some fever, cough, dyspnœa, and but little expectoration. On examination it was found that the left chest gave evidences of a large accumulation of fluid, and from the previous history it was decided that this fluid was of a purulent character, and that its evacuation was necessary. The man was in good general physical condition, and consequently the case was one from which the best of results could be expected. In order to confirm the diagnosis of empyema the aspirator was used, and several ounces of pus were drawn off. It was then decided that the best course to pursue was to make an incision and establish free drainage, and afford opportunity for irrigating the pleural cavity. Dr. Charles Dewey, the visiting physician, operated, making the incision in the intercostal space, as low down as possible, and without interfering with the ribs, in order that the freest drainage might be obtained. The operation was followed by no unfavorable symptoms, and I think this was in a measure due to the aspiration, on the day before, which allowed partial expansion of the lung.

The after-treatment of this case was to me the interesting part, and the method pursued was, to the best of my knowledge, the idea of Dr. Dewey.

A rubber drainage-tube, about ten inches in length, was introduced into the cavity as far as possible (about four or five inches), leaving about the same length outside the chest-wall. This was secured in place by threads sewed through the tube, which were attached to the chest-walls with strips of adhesive plaster. A glass tube, about four inches in length, was tightly fitted to the rubber tube, and to the other extremity of the glass tube was attached a second rubber tube, which extended over the edge of the bed to the floor, the end resting in a glass jar, which was partially filled with a 5 per cent. solution of carbolic acid. An antiseptic dressing was placed over the wound and around the tubing where it entered the chest, so that it was next to an impossibility for air to enter, as the tubing which passed into the pleural cavity was large, and fitted so snugly that the patient complained of it.

Twice a day for a week or ten days after the operation the pleural cavity was carefully but thoroughly irrigated with a solution of bichloride, 1 to 3000, the tube being disconnected at the glass connection, but before this was done it was carefully pinched between the fingers until the connection was made with a fountain syringe.

Of course the progress was slow, as empyema is

not as easily cured as acquired, but the patient made a good recovery, with but few unfavorable symptoms, and with but slight diminution in lung power and capacity. He returned to the hospital some months after his discharge, and stated that he was in as good health as he had ever been, and suffered no inconvenience in his chest.

The measurement of his left chest, on expansion, was slightly less than that of the right, but there was no perceptible difference in action.

CASE II.—Male, barber, about twenty-five years of age. Admitted with history of having taken cold; chills and fever, increasing dyspnœa, which was very marked at time of admission, and short, hacking cough.

Patient said he had been to see a doctor (?), but had steadily been losing ground. Was expectorating a large amount of extremely foul pus. Heart-beat was rapid, but fairly strong. General physical condition greatly impaired.

The right chest gave evidences of fluid throughout its entire extent, and with the history and the purulent expectoration, empyema with a pleuro-bronchial fistula was diagnosed.

During the first night he spent in the hospital it was necessary to remove him from the general ward, as the odor from the pus expectorated polluted the air of the ward, and annoyed other patients.

On the next afternoon Dr. W. S. Ely, visiting physician, made an incision into the pleural cavity, and immediately there was an escape of large quantities of pus and air, the latter confirming the opinion that there was a connection between the pleural cavity and the trachea. The dyspnœa was greatly increased after the operation, as the sound lung would not act as well after the removal of the pus. Patient failed rapidly, and died on the following morning. The autopsy showed that the right lung was pressed so closely against the spinal column that it was impossible for air to have entered it at all, and even after the relief of the pressure caused by the pus there was no expansion. There was a fistula connecting directly with the bronchus which admitted a lead-pencil. The walls of the pleural cavity were covered with a purulent exudate.

These are, to my mind, two illustrative cases, the first showing what may be accomplished by active measures, and the second, what may occur if the condition is not recognized and properly treated. In all probability, both cases were pleurisies with effusions, and gradually changed into empyemas.

Fluid in the pleural cavity is a condition which every practitioner should be able to recognize and properly treat, but how often this condition is carelessly passed over as a "cold," "malaria," etc.

Often obstinate cases of pleurisy with effusion occur, which will give way to no form of treatment except the repeated use of the aspirator, and occasionally not even to that.

In empyema the best form of procedure, according to most authorities, is incision, free drainage and careful antisepsis. I do not see why we should hesitate to remove pus from the pleural cavity any more than from an abscess. .

All authors agree that surgical treatment is the only proper procedure in the case of empyema.

Austin Flint[1] says: "In the treatment of suppurative pleuritis, no reliance is to be placed on measures to cause absorption of the purulent liquid. If the pleural cavity contain pus in considerable quantity it will not be absorbed; but if life be sufficiently prolonged, and thoracentesis be not resorted to, it will, sooner or later, make its way either into the air-passages or through the thoracic walls. Hydragogues, diuretics, blisters, etc., will not only prove unavailing, but they do harm by impairing the powers of the system. Thoracentesis should be performed as soon as the purulent character of the liquid is ascertained. Aspiration may be employed and repeated, but in many cases, owing to the reaccumulation of pus, this mode of performing thoracentesis will prove unsatisfactory. An opening should be made at the bottom of the pleural sac, allowing the pus to escape freely." This author goes on to state that this incision must be kept open by means of an "oakum tent," and the cavity cleansed with a solution of carbolic acid. This method is somewhat crude, as "oakum tents" and "carbolic acid solutions" are methods of the past, as the general tenor of the operation is toward surgical treatment.

Alfred L. Loomis[2] makes the following statement: "In the treatment of this affection it is useless to attempt to produce the absorption of the purulent accumulation by remedial agents. Its removal can only be accomplished by mechanical means—either by aspiration or by making a permanent opening in the chest-walls." Loomis advises the use of the drainage-tube, but does not favor irrigating the cavity, even though the pus becomes fœtid. The author may have been unfortunate in the irrigating process, but I do not think it possible for a perfect drainage to exist without this part of the treatment.

Wyeth, Erichsen, and, in fact, the majority of modern writers, advise thoracentesis, though all have their special "hobbies" in the minute details.

Dr. Goggans, in his article, advises repeated aspirations before resorting to the "open operation," but I think, in a measure, this depends on the character of the pus and the condition of the patient. A difference of opinion exists in regard to the advisability of aspiration or the "open operation," different writers claiming better results for each, but one fact is agreed upon by all, viz.: that the pleural cavities in these cases should be emptied. I think Dr. Goggans is right in opposing the view taken by Dr. Schede, of Hamburg, who favors resection of

[1] Practice of Medicine, page 142.

[2] Practical Medicine, page 161.

the rib. This seems to be unnecessary, unless the drainage-tube is compressed by the ribs, in which case it would certainly be advisable to remove a portion of bone; but unless this occurs, it seems useless to weaken the chest-wall.

Dr. A. R. Elliott, of this hospital, while in general practice, saw a case of empyema with a bronchopleural fistula, the sequelæ of typhoid fever and pneumonia, which recovered without surgical interference; but, of course, this is one in a thousand cases.

I think Dr. Lydston's case (quoted by Dr. Goggans) tallies very well with my second case, in being one of those which is unrecognized or neglected. In this case the man had been on board a trans-Atlantic steamer from the outset of the disease, and apparently nothing of any account had been done for him.

Perhaps my second case might be called a pyopneumothorax, but I report it here, as there must have been a purulent accumulation in the pleural cavity some time before the formation of the fistula.

I trust those who read this article will not think I am trespassing, but empyema may occur in insane people, and physicians in insane hospitals should be as much interested in diseases of the chest, abdomen, etc., as in mania, melancholia, circular insanity, or general paralysis.

ON THE REFORM IN NUMBERING PRISMS.

By SWAN M. BURNETT, M.D., Ph.D.,
of Washington, D. C.

Some time ago I had the opportunity of seeing a manuscript submitted for publication which dealt with a new method of designating anomalies in the refraction of the eye. The system consisted essentially in the adoption of a varying index of refraction in the media as expressive of the varying refracting power. The points were well taken, the argument was logical, scientific, and conclusive; but I do not believe the system ever came, or is likely to come, into general use, for reasons which are too apparent to require mention.

When I first saw the proposition to use what is called the centrad as a method of designating prisms, this ingenious system of marking ametropia instantly came into my mind, probably because of its analogous cleverness and ingenuity. For I hasten to say that the centrad *is* an ingenious conception, as are all the conceptions which originate with Dr. Dennett; and as a work of ingenuity I admire it as much as anyone can. But in this work-a-day world, where we have to deal with only average intelligences, and where prejudices of tradition and custom and the inertia of established habit are the greatest obstacles we have to advancement in all lines of scientific study and work, any radical innovation which requires a reëducation from the very foundation can hope for success only when it possesses a practical advantage over all competitors, which can be easily demonstrated to the most ordinary comprehension. That, in my opinion, the centrad does not possess such advantage in the numbering of prisms I have stated in my paper in the January number of the *Ophthalmic Review* and given my reasons therefor. Those interested in the question I would refer to the paper itself as expressing in general the arguments which I conceive to be valid against it and the minimum angle of deviation, and those in favor of the prism-dioptry.

The object of this present communication is to reply as briefly as possible to some strictures on that article, made by Dr. Randall in the issue of The Medical News for April 4th.

Among other things, he says: "The prism-dioptry, which is a tangent measurement, declines in value with each increase of the angle." What he should have said, and what he probably meant, is that the tangent, being a growing function, *increases* with the value of the angle until the latter reaches 90°, when the tangent is *infinitely great.* There is nothing that is absolutely contrary to the truth in that simple proposition, but it has the defect of not telling the whole truth. He makes the mistake of assuming that we are compelled to regard the deflection caused by a prism on a plane at any given distance in the light of a tangent. Now, as I have stated in the paper referred to, we are compelled to do nothing of the kind. We can, without surrendering any scientific principle, regard the deflection as a displacement, measurable in a linear manner on this plane, without regarding its reciprocal as expressed in sine, tangent, co-sine, co-tangent, degree, minute, or second, or in any other way that may be fancied. The absolute difference, however, between the multiples of the sine, tangent, and arc, for even a prism of 10°, which is higher than is, or should be, used in practice, is really insignificant:

Tang. 1°=0.01745.	Arc 1°=0.01745.	Sin. 1°=0.01745.
Tang. (10x1) 10°=0.17633.	Arc (10x1) 10°=1745.	Sin (10x1) 10°=0.017365
Diff., 0.00183 less.	No difference.	Diff.=0 00085 more.

How simple and easy it is to explain to even the uninitiated that a No. 1 prism is one which causes a deflection of one centimetre on a plane at a distance of one metre; No. 2, two centimetres; No. 3, three centimetres, and so on. That represents exactly and truly the amount of work done by the special prism so designated, and that is precisely what we want to know. We care nothing, practically, about its reciprocals expressed in angles, any more than in co-sines or co-tangents; and yet we can find these if, from curiosity or for scientific reasons, we so desire, from the ordinary table of sines, co-sines,

etc., just as we now have to find these reciprocals from the angle. And the fact that the angle of twenty prism-dioptres is not exactly twenty times the angle of one prism-dioptre is a matter of no practical consequence whatever, because we have not, nor need we have, anything to do with angles, any more than when we are dealing with spherical and cylindrical lenses—which, after all, are only series of prisms of constantly-varying deflection.

What is our standard for refracting lenses? One which causes a deflection of all parallel rays to a point on a plane at a metre's distance. What should be our standard for prisms in harmony with this? Naturally, one which causes a certain deflection at the metre plane; and what more appropriate and in keeping with our accepted standard of linear measurement than to have this unit deflection one centimetre? This is in consonance with the C. G. S. system, which is assumed as the basis of the centrad. The prism-dioptry is not only strictly scientific and exact in what it professes to do, namely, to give the deflecting power of any given prism, but it is marvellously simple in principle, is in perfect harmony with the metric system of numbering spectacle lenses, and is easily practised by anyone having a metre measure and a centimetre scale.

We are taken to task by Dr. Randall, because we asserted that neither Dr. Dennett nor any of the advocates of the centrad had offered any practical method of measuring the power of prisms according to the radian system. He says: "Dr. Burnett has befogged himself by importing into the centrad system the 'minimum deviation,' which has no place there. Like the prism-dioptre, the centrad is a prism which at one metre distance deflects the ray of light falling at right angles upon one of its faces through the space of one centimetre, the only difference being that the centrad is measured on the arc and not on the tangent."

When we read that paragraph we wondered if Dr. Randall had re-read Dr. Dennett's original paper recently and was aware of what Dr. Dennett actually proposed in his centrad system. Dr. Dennett says nothing at all about measuring one centimetre on the arc at the metre's radius. He expresses his unit only in reciprocal angles, and says: "We define the ideal centrad as an achromatic prism that produces in light passing through it in a direction perpendicular to one of its faces a deviation of one one-hundredth of a radian, or 0.57295°." This was the basis of our remark that the centrad could not perform any function which was not now equally well performed by the minimum angle.

Those of us who advocate prism-dioptry are glad to have its principles acknowledged and accepted, but not exactly in the way Dr. Randall has done. To Mr. Prentice alone belongs the credit of having proposed as a standard prism one which produces a deflection of one centimetre at one metre's distance, and no advocate of the centrad ever hinted at it until after the appearance of Mr. Prentice's paper in the *Archives of Ophthalmology*. We owe the simplicity of that idea to Mr. Prentice; let us not deprive him of whatever honor belongs to the conception. But if the advocates of the centrad desire to abandon their original idea of the reciprocal angle and will accept the curvilinear deflection of one centimetre at a metre's distance as a basis of numbering, the difference in principle between that and the prism-dioptre would not be great. The difficulty, however, as was foreseen by Mr. Prentice and myself, is that the curvilinear measure is not so easily or readily made as the purely linear, and the practical advantage we saw was greatly in favor of the latter. It is so much easier to measure deflections on a plane than on a curve.

We would like to enter here into more detailed consideration of the relation of the prism-dioptre to the metre-angle, but as Dr. Randall has acknowledged the great practical value of Mr. Prentice's work in that particular, we will defer its discussion for a future paper, in which we hope to show how the whole matter of convergence can be made simpler and more easily studied by means of the prism-dioptre than it is now by means of the clumsy metre-angle.

In the decentring of lenses the prism-dioptry system shows up to the greatest possible advantage, as has been demonstrated thoroughly by Mr. Prentice in his paper in the *Archives of Ophthalmology*. In regard to this Dr. Randall naïvely remarks: "I question if this be correct, although I fail to detect any fault in the argument."

When he does we trust he will let us know.

Dr. Randall's desire to make the centrad supercede the angle in measuring strabismus and in designating the direction of the axes of cylinders we cannot but regard as vain, knowing as we do the antipathy to change from even a bad system already established in the working of an art, although it be a scientific one, which prevails in the minds of the profession at large; when the reform comes, we fancy it will not be in the line of the centrad.

We quote, finally, this Parthian shot: "Dr. Burnett's assumption that the centrad is indivisible, and that only exact whole numbers can be employed, is gratuitous, to say the least."

Dr. Burnett never entertained any such opinion, and is not able to find any expression pointing to such an opinion in anything he has written on the subject.

ON THE RELATION OF ATMOSPHERIC ELECTRICITY, MAGNETIC STORMS, AND WEATHER ELEMENTS TO A CASE OF TRAUMATIC NEURALGIA.[1]

BY R. CATLIN,[2]
U. S. ARMY.

IN the relationship of atmospheric electricity to pain, it is shown that by a comparison of 120 daily curves taken on neuralgia periods with the mean of the same number for *ten consecutive days* of each month, pain seeks identity with both lower positive curves and with the negative, and with fluctuations of great amplitude.

For the influence of May storms on pain the maximum auroral period of 1882–83 was selected; of this period, seven of the greatest magnetic storms were chosen. Accompanying each was pain, and in the majority of cases pain of unusual intensity prevailed. The great storm of November, 1882, the greatest of which we have a record, shows the relationship to be unequivocal. In the other cases the magnetic storm was coincident with other causes, which may or may not have had something to do with pain, but in four cases no dry or wet cyclone was in any way connected with the trouble.

The comparison of the weather elements—such as pressure, temperature, force of wind, humidity, relative and absolute, days of rain, depth of rain, hours of sunshine, number of storms, and ozone—with pain—covers a period in no case of less than five years. Of these the increasing temperature curve, the hours of sunshine curve, and the absolute vapor curve, operate to diminish pain, while all the others are identified more or less with pain. In the monthly products for fourteen years it appears that the "depth of rain," ozone, and "number of days of rain," in this order, but almost equally, constituted the best standards for pain measurement. By generalizing on the extremes through all these years, by taking the twelve months of greatest pain and the twelve of least pain, the above conclusions are verified, and the law stated in general terms, as follows:

Maximum pain bears a direct proportion to storm frequency, and an inverse proportion to temperature and elastic force of vapor; and minimum pain bears an inverse proportion to storm frequency, and a direct to temperature and elastic force of vapor; while depth of rain accompanies the number of storms and maximum pain. Charts of *relative storm frequency* and *geographical pain* charts are thus ralated.

What are known as "*spells*" or "*types*" of weather, lasting from one to three weeks, probably due the relative position of the great anti-cyclone areas, have their influence on pain condition. This fact was recognized early in the history of this case in 1869. Increased amount and intensity of pain accompany these "spells," particularly at their beginnings. Covering a period of fifteen years the *relative ratios of the monthly products of pain* were as follows: February, 176; March, 175; January, 174; December, 168; November, 164; April, 161; May, 160; July, 159; June, 154; September, 153; and October, 153. The ratios were determined by dividing the total number of hours of neuralgia of each month by the total number of hours in the month for the whole period of fifteen years.

Perhaps the most difficult and complex part of the problem is in offering an explanation of the diurnal fluctuations of pain.

The record of hourly beginnings of pain covers a period of more than eighteen years; and the curve of the record of hourly beginnings of storms and the amount of rain of each covers a period of sixteen years.

The daily pain curve exhibits 3 pain maxima; the first at 11 A.M., the second at 2 P.M., and the third at 7 P.M. The part of the curve at 6, 7, and 8 A.M. has almost an inverse counterpart in 8, 9, and 10 P.M., but in the curve from 9 A.M. to 7 P.M., there is a very important minimum at 12 M. and 1 P.M., then a subordinate minimum at 3 P.M., very like that at 10 A.M., followed at 5 and 6 P.M. by a distinct minimum.

By placing on the pain curve the storm curves for the sixteen-year period, it becomes manifest that while the absolute values of the rain depths and number of storms on the pain curve do not show a full correspondence, it is, however, clear at once that there is a relative value between the two and the pain.

In all discussions of this subject to this time, only instrumental records, such as synoptic charts, thermograms, etc., have been brought into use, but it is clear that the physical effects produced by the temperature on the southeast side of a cyclone is very different from the same record-temperature on the west or the northwest side.

It is found that the eastern edge of the neuralgic crescent lies more than six hundred miles, or about twenty-three hours to the east of the centre of the "lows," but no two cyclones or rain conditions are exactly alike, and have different kinds of rain, and when we consider that there are two atmospheres—one of a dry, gaseous air, and another one distinct, of aqueous vapor, with the latter never thoroughly intermixed with the former, and never in a state of equilibrium—we partially realize how impossible it is in any given storm to get a complete record by instruments, or of those which are the best pain-

[1] Presented at the Boston Meeting of the National Academy of Science, November, 1890.

[2] See letter of Dr. Mitchell, p. 506.

producers, for without apparent instrumental cause they vary much in this respect.

No local hygrometric reading can give anything more than a vague approximation of the quantity of vapor or its mixture in a vertical column of air.

A typical neuralgic atmosphere, anticipating a cyclone, may be a dry air with a diminishing light, variable wind, and a pale, delicate, bluish whiteness in the atmosphere, more marked toward the horizon, and in the first stage more marked in the western horizon. The sickly whiteness may increase for from twenty to sixty hours, with an increasing discomfort when exposed to the peculiarly penetrating power of the sun's rays, but during all this typical condition there is nothing which has measured the changing aspect of the air, nor its changing condition of heat permeability, nor the absolute vapor, except at the surface, nor the distinctive character of the cyclone heat in the southeast quadrant, nor the direction of the upper and cross currents of wind, nor, above all, the modifications of the diurnal and "semi-diurnal" effect superimposed on the cyclone movement. It, therefore, seems important, in studying the hourly phases of pain, that meteorological charts should be supplemented by a descriptive narration to complete the record, and a closer study of the effect of diurnal change on weather.

OCULAR SIGNS AS AIDS TO DIAGNOSIS.[1]

BY E. OLIVER BELT, M.D.,
OF WASHINGTON, D. C.

As all rational treatment of disease depends upon a correct diagnosis, any information that will aid in quickly forming correct conclusions regarding the nature of an affection will, I think, be welcome to the busy practitioner; and knowing that the eye and its appendages are frequently the seat of the local expression of general disease, and of special disease of other organs, or portions of the body, it is my purpose to give a brief summary of the most important of such ocular signs, and the deductions to be made from them. We will first consider affections of the conjunctiva, lids, cornea, iris, and lens, as seen by the unaided eye; and, secondly, those diseases revealed by the use of the ophthalmoscope, and the testing of the field of vision.

When a physician is called to the bedside of a patient, examination of the pulse and the tongue for indications regarding the circulation and digestion is of so much importance as to have become routine practice. To this routine should be added at least a cursory observation of the condition of the eye. Dr. Rosse, in a paper on "Cerebroscopy,"[2] meaning thereby the "method of diagnosing cerebro-spinal disease by studying the alterations of the eye," says: "This new science, though still incomplete, has done so much to advance the diagnosis of nervous diseases that the advocates of cerebroscopy place it in the first rank of the methods of exploration employed by physicians; and remarks, without exaggeration, that it is for diseases of the brain and spinal cord what auscultation and percussion are for diseases of the chest, for it is now quite possible by this method to see in the eye what is taking place in the brain."

It takes but a moment to notice whether the conjunctiva be clear or jaundiced, the palpebral portion congested or pallid, the lids puffy or discolored, the cornea clear or cloudy, the pupils dilated or contracted; whether there is perfect movement of all the muscles of the eyeball and lids, and whether vision is affected in any portion of the field.

Beginning with indications afforded by the conjunctiva and lids, we need no better evidence of hepatic derangement than the icterode conjunctiva, nor of anæmia, than the pallid mucous lining of the lids. Phlyctenular diseases of the conjunctiva and cornea are indications of lowered vitality and a strumous condition. Œdema of the lids, unaccompanied by inflammation of the eyeball, points to diseases of the heart or kidneys; this condition, however, may result from the use of certain drugs, as arsenic, it being frequently the first intimation of poisoning by that drug. It is also a useful guide in the therapeutic administration of arsenic. A succession of styes denotes a lowered condition of the general health, or derangement of the stomach or reproductive organs. Marginal blepharitis also indicates lowered health or an error of refraction. Protruding eyeballs, a rapid heart, and enlarged thyroid gland are familiar symptoms of Graves's disease.

The chief diagnostic sign given us by the cornea is interstitial keratitis. As a result of syphilis Nettleship says: "That diffuse, chronic keratitis, affecting both eyes of children and adolescents, is, when well characterized, almost invariably the result of hereditary syphilis, is proved by abundant evidence."

As a rule, the characteristic Hutchinson teeth are seen with this condition. In the old we sometimes notice painless ulceration of the cornea, which signifies a lesion of the fifth nerve. Arcus senilis is often an accompaniment of fatty heart, and an indication of fatty degeneration of other tissues of the body. The iris frequently gives us indications of unsuspected syphilis and premonition of gout and rheumatism for weeks before there are other manifestations of these diseases.[1] About 70 per cent. of the cases of iritis are due to syphilis. It usually affects both

[1] Read before the Medical Society of the District of Columbia, March 18, 1891.

[2] Reference Handbook of the Medical Sciences.

[1] THE MEDICAL NEWS, December 27, 1890.

eyes, which is an important fact to remember, as unilateral iritis is generally due to rheumatism, which causes about 15 per cent. of all cases. A gumma of the iris is a positive indication of syphilis.

The condition of the pupils frequently gives us the first intimation of brain or spinal disease, and in cases of poisoning it assists in determining the nature of the poison, and the antidote.

Nettleship[1] says: "Reflex iridoplegia (the Argyll-Robertson pupil) is one of the most valuable of the early signs of locomotor ataxy." Inequality of the pupils seems to be very frequently a precursor of insanity. Aside from dilatation caused by paralysis of the third pair of nerves and the local influence of mydriatics, according to Meyer and other authorities, the pupils are found dilated in hysteria, in hypochondria, in the later stages of meningitis, in hydrocephalus, etc. Sudden dilatation of the pupils during the administration of chloroform is a very important danger signal.

Contraction of the pupils, according to Swanzy,[2] is found in the early stages at least of all inflammatory affections of the brain and its meninges, in tobacco amblyopia, at the beginning of an hysterical or of an epileptic attack, in the early stages of intra-cranial tumors situated at the origin of the third nerve, or in its course. In cerebral apoplexy the pupil is at first contracted, according to Berthold, who points out that this contraction is a diagnostic sign between apoplexy and embolism, in which latter the pupil is unaltered. In lesions above the dorsal vertebræ myosis occurs. Some authorities regard myosis as one of the earliest signs of tabes, while others do not. In acute mania the pupil is usually much dilated, and when this mydriasis is changed for myosis, approaching general paralysis may be prognosticated.

The pupils are dilated in poisoning by strychnia, ergot, belladonna, stramonium, hyoscyamus, duboisia, cocaine, and aconite; and are contracted by lethal doses of opium, jaborandi, physostigma, tobacco, etc. Loss of accommodation, with or without dilatation of the pupils, frequently follows diptheria, and may be the only positive evidence that the sore throat was diptheritic. Changes in the lens are sometimes of diagnostic value, as rapidly forming cataracts in persons of middle age are indications of diabetes mellitus. In one patient under my observation, suffering with that affection, cataracts formed and matured in both eyes in about six weeks. Muscae volitantes generally indicate disordered digestion, but this affection is not to be confounded with floating bodies due to changes in the lens, vitreous, and choroid, which are generally of a serious nature.

[1] Diseases of the Eye.
[2] Ibid., pages 274-275.

Among the indications revealed by the opthalmoscope we may mention symmetrical disseminated choroiditis with opacities in the vitreous as being almost pathognomonic of syphilis. In this affection the retina is often involved with the choroid. But the retina gives us useful indications in a number of other affections. Notably, in Bright's disease impaired vision is often the only marked symptom. According to Wells,[1] disease of the kidney may be unknown and unsuspected until the ophthalmoscope reveals the presence of the characteristic albuminuric retinitis. During the latter months of pregnancy amblyopia may be the first symptom intimating the probability of albuminuria. Blindness following delivery is more often from loss of blood.

Idiopathic retinal hæmorrhages are of decided significance, especially in the old, where they are often precursors of cerebral apoplexy. In illustration of this point I recall a case which came under my observation a few years ago, at the Presbyterian Eye and Ear Hospital, Baltimore. A prominent physician of the South, about eighty years of age, but in apparently excellent health, had been awaiting patiently the maturation of a cataract; suddenly vision in one eye was reduced to perception of light, and concluding that the cataract was mature, he came on to have it removed by Professor Chisholm. Instead of finding an opaque lens, however, we found extensive hæmorrhages into the vitreous. In less than a week after returning to his home he died suddenly in his office of apoplexy.

Retinal hæmorrhages are not unfrequently seen in organic disease of the heart, and sometimes they result from menstrual suppression. In the absence of glaucoma, when pulsation of the retinal arteries is observed, we might suspect insufficiency of the aortic valves, aneurism of the aorta, Graves's disease, or chlorosis. Amblyopia in certain cases may lead us to suspect tobacco-poisoning, especially if accompanied by central scotoma for red. Optic-nerve atrophy is often the first intimation of locomotor ataxy.

Optic neuritis, loss of sight in portions of the field, and paralysis of certain ocular muscles, frequently give us such aids as to enable us to diagnosticate with comparative certainty not only the presence, but often the location of cerebral lesions. According to Gowers,[2] neuritis is present at some period in at least four-fifths of the cases of tumor of the brain. He says the value of optic neuritis as an indication of the existence of an intra-cranial tumor is very great, and that it may be the only unequivocal sign of the intra-cranial disease. Nettleship says: "Although pointing very strongly to organic disease within the skull, neuritis is not of itself

[1] Diseases of the Eye, 1873, page 373.
[2] Medical Ophthalmoscopy, page 164, 1891.

either a localizing or differentiating symptom." In conjunction, however, with other symptoms that are frequently present it is of much value in localization.

Neuritis limited only to one eye, generally indicates disease of the orbit. Loss of half the field of vision (hemiopia) is one of the most important aids in the localization of cerebral lesions. When binocular it indicates disease at or behind the optic chiasma. In the majority of cases the hemiopia is homonymous, that is, the right or left lateral half of each field is lost. Loss of the right half of each field points to disease of the left optic tract, or of some part of the left occipital lobe, or in the fibres connecting these parts. Temporal hemiopia points to disease at the anterior part of the chiasma. When lateral hemiopia co-exists with hemiplegia the loss of sight is on the paralyzed side. Swanzy[1] says: "We may conclude that the hemiopia depends upon occipital lesion, if it be unaccompanied by hemiplegia, motor aphasia, or paralysis of cerebral nerves;" also, that contraction of the pupil in a case of hemiopia, when the light is thrown on the blind half of the retina, indicates that the lesion causing blindness is back of the corpora quadrigemina. The absence of this reaction indicates that this lesion involves the corpora quadrigemina or the optic tract. Sometimes there is incomplete hemiopia, that is, only one quadrant of the field of vision is affected. Hun[2] reports a case of this kind, in which the left lower quadrant in each field was blind, and where the autopsy showed a lesion strictly limited to the lower half of the right cuneus. Remember the fact that loss of a certain half of the *field* means loss of function of the opposite half of the *retina*.

Paralysis of the ocular muscles also aids in locating cerebral disease. Complete paralysis of the third nerve, without any other paralysis, is almost always due to lesion at the base of the brain, on the same side. Hemiplegia of one side, coming on simultaneously with paralysis of the third nerve of the opposite side, is a common sign of disease of the crus cerebri. When paralysis[3] of the third nerve occurs with hemiplegia of the opposite side of the body and other cerebral symptoms, it is usually due to pressure on the nerve where it runs beneath the cerebral peduncle. According to Nothnagel, this localization is still more certain when paralysis of the facial and hypoglossal nerves exist on the same side as the hemiplegia.

Paralysis of the sixth nerve, according to Swanzy, simultaneous in its onset with hemiplegia of the opposite side of the body, indicates a lesion of the pons, usually a hæmorrhage on the side corresponding to the paralyzed nerve. By itself paralysis of the abducens is of little value in the localization of cerebral disease from the fact that it is so often of peripheral origin.

There are many other ocular signs which aid in diagnosis, but I think this summary embraces most of those which have been verified in the clinic and by autopsies.

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[1] Diseases of the Eye, page 402, 1890.
[2] American Journal of the Medical Sciences, January, 1887.
[3] Pepper: System of Medicine, vol. iv. page 780.

THE GREAT VALUE OF OPENING THE EUSTACHIAN TUBE IN DISEASES OF THE HEAD AND EARS.

BY LAURENCE TURNBULL, M.D., PH.G.,
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THIS case, with the one which follows, was sent by a friend, and must be my apology for this brief paper. The writer was called in consultation in Germantown, in the vicinity of Philadelphia, to see a case of deafness with other distressing symptoms. The following history is given by the attending surgeon:

G. A., aged thirty years, of full habit and sanguine temperament, fond of field sports, horses, etc., was driving with his coachman, and on making a sudden turn near Bala station the carriage was overturned, the gentleman falling on his side and striking the left ear and side of the head on a hard body, producing symptoms of concussion of the brain and profound deafness of the same ear, with distressing tinnitus aurium. He was treated most judiciously by his attending surgeon for ten days, but with no relief from the noise or deafness.

When called in I found the patient in bed with his head wrapped up and a poultice over his ears and very much distressed about his hearing. On examination, there was found a swelling situated back of the ear. The auditory canal was inflamed, and the membrana tympani opaque and dark from some material in it, and bulging. The surgeon had hesitated to puncture until I had seen the case. I suggested the use of the Eustachian catheter and inflation through it as perhaps a safer method of procedure. This was done both for the noise and also to give the patient a good, refreshing sleep. Pus, mucus, and blood passed in this way, first by the catheter, and after the free opening into the pharynx, was expectorated as if from an abscess; after some weeks of treatment all evidence of any foreign body was removed, the hearing improved, but the noises did not altogether disappear. The patient was able to take a trip to the West, still keeping up the use of remedies for the noise, which gradually disappeared, and he is now entirely cured.

The following case of Bayer, of Brussels, is analogous to the one above reported:

Male, aged thirty-three years, highly nervous temperament, and a great traveller; was out riding, and after being violently thrown from his seat, again

mounted. Upon dismounting he had to be carried to bed, and became unconscious; now and then pointed with his hand to the left ear. Had subsultus and all the symptoms of pressure. An examination of the auditory meatus showed everything to be in order and was negative. Catheterization suddenly restored the patient to consciousness, and he told this story: That he felt something snap or give way in the left ear when he was so violently jolted. His recovery was slow and he was very nervous; his left arm trembled frequently, and the intellectual functions were impaired for some time. Unconsciousness lasted nearly thirty hours in all. Nervous shock seemed to be the cause of the trouble, which was concussion of the brain, or it might have been auditory, especially as catheterization induced sudden and positive relief.

ORIGINAL LECTURES.

RANULA—SUBCUTANEOUS SECTION OF THE FEMUR FOR THE CORRECTION OF DEFORMITY FOLLOWING COXALGIA—EXCISION OF RIBS FOR EMPYEMA—NECROSIS OF THE HUMERUS—EXCISION OF THE KNEE.

A Clinical Lecture
delivered at the Children's Hospital of Philadelphia.

BY H. R. WHARTON, M.D.,
OF PHILADELPHIA.

[Reported by DR. WILLIAM H. MORRISON.]

THE first case which I have the pleasure of showing you is one of

RANULA.

By ranula we mean a tumor in the floor of the mouth in front of and under the tongue, with thin walls covered with mucous membrane and filled with fluid contents of a syrupy consistency. Its origin is supposed to be in a dilatation of the submaxillary or sublingual duct. This unquestionably constitutes one variety of ranula, known as acute ranula. Recent investigations have, however, shown that in the majority of cases the tumor is really a retention cyst of one of the mucous follicles in the floor of the mouth. The affection occurs both in adults and in children, but is more common in the latter. The floor of the mouth is often much raised by the tumor, and even the tongue may be lifted up. When large, it may cause a depression of the submental tissues, and the floor of the mouth may be raised to a level with the lower incisors. The affection is not dangerous, except where there is marked dilatation of the ducts and the tumor increases so much in size that it pushes the tongue upward and backward, interfering with the entrance of air into the lungs.

The treatment may be conducted in several ways. Simple puncture of the cyst does not usually result in a radical cure. Another method of treatment is by the introduction of a seton into the sack of the ranula. The fluid escapes and the seton sets up inflammatory action, and the ranula may be cured in this way; but the time required is longer than by the method that I shall speak of, and which I consider the best; that is, excision of a portion of the wall of the ranula. This is done by seizing the mucous membrane with forceps and cutting out a portion of the wall with scissors. The amount removed should be considerable, and if the ranula extend to the opposite side of the mouth, it is well to take a section out on the other side. The fluid contents are then squeezed out, and you may touch the inner surface of the sac with a solution of nitrate of silver or tincture of iodine, or a piece of the solid stick of nitrate of silver may be passed into the cavity and the walls lightly cauterized. Cure of the condition generally follows this operation. The patient suffers little pain, and the only after-treatment necessary is to keep the mouth perfectly clean. This may be done by a mouth-wash containing chlorate of potassium, glycerin and myrrh, or one of boric acid, carbolic acid, glycerin, and water. We cannot use the ordinary antiseptic solutions, such as carbolic acid and bichloride of mercury solutions, when operating on the mouth. We wash the parts with pure water, and depend upon that. It is impossible to keep the mouth aseptic after operation. In operating on these cases it is more satisfactory to use the mouth-gag, so that the jaws are held apart and sufficient room is obtained. There will probably be considerable swelling for a few days, but this will diminish as the parts heal.

SUBCUTANEOUS SECTION OF THE FEMUR FOR THE CORRECTION OF DEFORMITY FOLLOWING COXALGIA.

The next case is one of hip disease of some standing. The child is six or seven years of age, and has suffered for several years from coxalgia. The disease ran a rather quiet course. The case was probably not treated for some time, but an accidental complication arising, the boy was brought to us, and treated in the ordinary way. The limb was extended by a weight, and lateral support by means of sand-bags was employed. The child has developed no inflammatory complication, and the reason I bring him before you is to do an operation to remedy the deformity which results from the cure of the disease. A great many of these cases of hip-joint disease, in which recovery takes place, are left with the limb slightly flexed on the pelvis and with a slight amount of abduction. This is the characteristic deformity following cured hip-joint disease, even where special apparatus is employed to prevent it. The deformity causes a certain amount of shortening of the limb, and interferes, to a certain extent, with progression. There is, in this case, limited motion at the hip joint.

To remedy this deformity, we have two operations. One is excision of the head and neck of the femur; the other, subcutaneous osteotomy of the neck of the femur, or of the shaft of the bone just below the lesser trochanter. The latter operation is the one which I consider the better in these cases. It is attended with little risk, and results in a satisfactory cure of the deformity. The operation was devised by Mr. Adams, of London. It consists in making a section of the femur with a small saw passed through a wound on the outer side of the thigh. The operation suggested by Adams was section of the neck of the thigh-bone. This is a good operation in certain cases of deformity, and especially in those cases which seem to be of rheumatic origin, where there is little change in the shape of the head and neck of the bone; but in coxalgia, where the disease has destroyed

the head of the bone and involves the acetabulum, the operation is not so good as the modification devised by Gant, which consists in a subcutaneous section of the femur below the lesser trochanter. As I have said, the operation is attended with little risk. I know of only one case in this city which did badly after this operation; but that one eventually recovered with a cure of the deformity. This was early in the history of the operation, before it was properly understood. A small puncture is made with a strong tenotomy knife on the outer side of the thigh. Then the tissues are divided with a blunt-pointed knife around the bone and this is followed by the introduction of a special saw, known as Adams's saw, and the bone is divided. The small wound is closed with a compress, and generally heals without trouble.

The deformity in these cases is due, in a measure, to the action of the psoas and iliacus muscles, which are inserted into the lesser trochanter. When the bone is divided below the trochanter, the limb can be brought into its normal position, thus leaving a wedge-shaped gap, which becomes filled with new bone in a short time. If, however, the neck of the bone is divided, while you may correct the deformity, the action of the muscles will tend to reproduce it. That is the objection to Adams's operation in this variety of case. In some cases there is a slight amount of hip-joint motion; in others, there is complete ankylosis. In either event, the operation is a proper one.

The first thing to do is to locate the position of the greater trochanter. There is sometimes a little difficulty in doing this, for its position is, of course, changed by disease of the head of the bone. Having located the trochanter, I make a section of the soft tissues a little below it. The knife is passed down to the bone and the saw introduced by its side. The saw is then passed over the upper portion of the bone and brought to a right angle with it. The section of the bone is then made with short cuts of the saw. Having divided the bone I bring the limb into its proper position. I have really produced a compound fracture of the femur, which, before the days of antiseptic surgery, would have been an unjustifiable procedure simply for the relief of this deformity. Over the opening made I apply a compress of bichloride gauze dusted with iodoform, and held in position by a few adhesive straps. The treatment now will be that of fracture of the femur, the patient being kept in bed, and extension by a weight, with lateral support by sand-bags, employed to keep the limb in position. The child will be kept absolutely flat on his back for four or five weeks. By that time union is generally quite firm, and the small wound, through which the section was made, has generally satisfactorily healed long before. There will probably be some shortening of the limb, which can be overcome by the use of a high shoe. In some of these cases, there is a tendency for the lower fragment to ride up. In such cases we apply a sand-bag over the anterior surface of the femur for a few days after the section.

EXCISION OF RIBS FOR EMPYEMA.

The next case is one of empyema of some duration. I first saw the patient last summer, and made openings between the ribs, introducing large drainage-tubes. The result was satisfactory for some time. The general condition improved, and he was sent to the convalescent branch of the hospital in the country, and in the fall the discharge from the tube had almost ceased, and his general condition had much improved. The drainage-tubes were gradually shortened and withdrawn. There was left only a small sinus, which I thought might be connected with a localized caries of the ribs. The boy then left the hospital, and, some weeks afterward, in playing, received an injury over the seat of the original trouble. This was followed by fever and return of the symptoms connected with the chest, and the patient was again brought to the hospital. We dilated the drainage wound, introduced a tube and found a large collection of purulent matter. The patient was then kept under observation, and the chest drained and washed out, every second or third day, with antiseptic solutions. We also washed out the cavity with a solution of peroxide of hydrogen. The case has now come to a point where some decided operative interference seems advisable. I propose to-day to explore the wounds, expose the cavity, and if I find any considerable space between the costal and pulmonary pleura I will excise a portion of one, two, or three ribs, as may be deemed necessary. This case was also complicated by an attack of scarlet fever a few months ago. It is unusual in children that excision of the ribs is necessary for the cure of a cavity resulting from empyema. I have generally found that in children free drainage with large drainage-tubes, with thorough washing out, will bring about a satisfactory result. The elasticity of the chest-walls will generally allow the parts to sink in, and bring the two surfaces in contact, so that healing will take place if drainage is maintained. It is only after a faithful trial of less heroic measures that I have deemed it advisable to excise a portion of the ribs.

In excising the ribs, we first turn up a flap of the chest-wall, including the skin, superficial fascia, and muscular tissue, exposing the ribs. Then we explore the cavity and see in which direction it extends, and then remove a portion of one rib, or of several ribs, as the case may be. We can divide the rib with the Hey's saw or with forceps. I prefer to weaken it with the saw and then complete the section with bone-forceps. The only hæmorrhage that is to be looked for is from the intercostal arteries. This we may have to control with the cautery. I removed about an inch and a half of the rib without injuring the costal pleura. I find that the cavity extends upward over the diaphragm, and I shall also take out a like amount of the rib above. Hæmorrhage is then controlled by the application of ligatures, and the cavity thoroughly washed out with a solution of bichloride of mercury, 1 to 4000. A large drainage-tube is next inserted, and an antiseptic dressing applied. The tube will be allowed to remain three or four days, and then the cavity will be again washed out. The dressing consists first of protective, over which a wet bichloride-gauze dressing is applied; over this is dry gauze dressing covered with bichloride cotton, and a bandage is applied to secure the dressings, but not so tightly as to interfere with the respiratory movements.

NECROSIS OF THE HUMERUS.

The next case is a boy, six or seven years old, who presents, at the upper part of the left arm, an opening

through which protrudes a portion of necrosed bone. The history of the case is that four or five years ago there was an inflammatory affection of the bone, which terminated in the formation of an abscess, and since that time there has been a constant discharge from the opening. Recently there has appeared in the sinus a mass of dead bone. This is often the history of these cases of inflammatory affections of the bone which are not subjected to prompt surgical treatment. The disease originally starts as an inflammatory affection of the periosteum or of the bone; abscess is apt to follow, and then exfoliation of the bone takes place gradually. In long-standing cases there is generally a firm, well-developed involucrum surrounding the dead bone, which has its origin in the periosteum. The whole shaft of the bone may be dead and surrounded by this involucrum. The more chronic the case the more extensive and hard is this bone-sheath. These long-standing cases, in which the dead is separated from the living bone, are favorable cases for operation. The necrotic process in the bone is limited, and the dead bone is ready to be thrown off, and in many cases the only thing that prevents spontaneous extrusion is the large size of the sequestrum, and the fact that the sheath of new bone surrounds it.

I shall first apply Esmarch's bandage, which renders the operation bloodless. The dead bone is then exposed and the involucrum chiselled away, leaving a cavity with sloping edges, which can be filled with granulations. The cavity should be kept packed, so that it will heal by granulation from the bottom. When the wound is thoroughly healed a depressed cicatrix is left. This is an evidence that the necrotic process is arrested, and that the wound has healed in a satisfactory manner. I have not had an opportunity to examine this case before, and it may be that the cavity is very small, and all that will be necessary will be to remove the sequestrum and pack with bichloride or carbolated gauze. In these operations on the arm, care must be taken to avoid injuring the musculo-spiral nerve, which crosses the arm about its middle. In a recent case, where I removed the whole shaft of the bone from the upper to the lower epiphysis, I avoided all risk of injury to this nerve by dividing the tissues above and below the region of the nerve, and then raising the tissues under the nerve so as to cut away the bone and make the cavity continuous, allowed the soft parts containing the muscle sheath to form a bridge over the true cavity. Having applied the Esmarch's bandage, I cut down on the sequestrum and separate the periosteum from the bone. Then with a chisel I enlarge the opening in the new bone and remove the sequestrum. The cavity extends downward some distance, and I enlarge the opening so as to have a cavity with sloping edges, which can be readily packed. All overhanging portions of bone are removed, and the cavity scraped with the osteotrite. The wound is then washed and packed with bichloride gauze. A piece of protective is first put in the wound. This prevents adhesion of the packing to the surface of the bone, and facilitates the redressing. The dressing is completed before removing the Esmarch's bandage. This dressing will be allowed to remain undisturbed for a week, and the case will then be redressed in the same manner, and we will expect to find the wound at that time covered with healthy granulations.

EXCISION OF THE KNEE.

I now bring before you a girl, four or five years of age, who is suffering with a chronic inflammatory affection of the knee-joint. The appearance presented is that of ordinary gelatinous or tubercular arthritis of the knee. The disease has existed for some time. The parts are much swollen, but as yet there are no discharging sinuses. The limb is useless, as far as its functions are concerned, and the time has arrived when some operative treatment should be instituted. In these cases of arthritis of the knee-joint, we do not recommend operation in the early stages. We are generally satisfied to employ some form of dressing or splint which will produce fixation, and treat the case locally by the use of resolvent applications and, at the same time, direct treatment to the constitutional condition of the patient. Many cases recover with considerable impairment of joint motion, and yet with useful limbs as regards locomotion. When the disease advances and there are marked degenerative changes, when the ligaments are involved and displacement of the articular surfaces occurs, with erosion and destruction of the cartilages or of the articular surfaces of the bone, then the case is one in which operative treatment is indicated. In these cases we have two operations. One, which has been recently adopted, is that of arthrectomy, which consists in exposing the joint, trimming out the diseased tissue, closing the wound, and suturing the lateral ligaments and the divided ligament of the patella. The limb is then placed on a fixation splint and an endeavor made to get union with a certain amount of motion. In some cases I have seen excellent results from this operation. In cases, however, where there is extensive destruction of the joint with probable necrosis of the articular surfaces, this operation is not apt to give good results. It is better adapted to cases before the bone is extensively involved. In instances like the present, I think that excision of the knee-joint is safer and a more satisfactory procedure as regards permanent cure. In this operation a transverse incision is made across the knee-joint, the ligamentum patellæ divided, and the joint opened. The condition of the bony surface is then examined, and as much bone removed as will take away the diseased tissue, and place the limb in its proper position. In this operation we do not aim to get a movable joint; we hope to get firm bony, or fibrous, union. The limb is more useful with bony union, as there is less tendency to subsequent deformity. After the operation the limb is kept on a bracketed wire splint, which permits removal of the dressing and redressing without disturbance of the limb. The incision which I prefer is a transverse incision passing below the patella; it starts at the inner condyle of the femur and extends over almost to the external condyle. The incision is carried down to the deep fascia, and then the flap dissected up until we have exposed the whole of the patella. We then divide the lateral ligaments and expose the articular surfaces of the tibia and femur thoroughly. Any hæmorrhage that occurs will be arrested by hæmostats temporarily, and the vessels will be tied after section of the bone is completed. As I open the joint, pus escapes in large quantities. The inflammation has also extended into the bursa above the knee-joint. The articular surface of the femur

is carious, but the tibia does not seem to be diseased to any marked extent. I remove a section of bone from the femur and also from the tibia, taking care that the sections are made so that when the bones come together, the limb will be in its proper position. I do not use the Esmarch bandage in this operation, because the amount of blood lost is not great, and where this bandage is employed in excisions the consecutive hæmorrhage may be quite troublesome. Having placed the bones in proper position, I curette the bursa above the knee-joint thoroughly, and drain it with a large tube. In some cases we may suture the bone, in other cases use ivory pegs or steel nails to fasten the bone together. In the majority of cases the splint affords all the fixation necessary. I also trim away the degenerated tissue around the knee-joint. The wound is thoroughly irrigated with the bichloride solution, a drainage-tube passed into the bursa and one across the front of the knee, and the edges of the wound brought together with sutures of silkworm-gut. The usual antiseptic dressing is then applied, and the limb secured to the bracketed wire-splint. [This case was dressed for the first time upon the tenth day after the operation, at which time the temperature was normal; the wound was solidly healed except at the points where the drainage-tubes protruded; these were removed with the exception of the one extending into the bursa above the patella, which was allowed to remain, and the case was redressed in the same manner as at the primary dressing.]

EXTROVERSION OF THE BLADDER—SYPHILITIC ORCHITIS—SYPHILITIC PERIOSTITIS.

A Clinical Lecture,
delivered at the New York Post-Graduate Medical School and Hospital.

BY HENRY DWIGHT CHAPIN, M.D.,
PROFESSOR OF DISEASES OF CHILDREN.

GENTLEMEN: The infant I present to you is one year old; it is fairly nourished, although showing slight evidences of rickets. At the lower part of the abdomen, just above the pubes, you notice a reddened mass, just below which is seen the penis, which is in a condition of complete epispadias. An examination of this case shows it to be one of those comparatively rare instances of extrophy or extroversion of the bladder. The reddened fungous mass consists of the posterior wall of the bladder, which is prolapsed through an opening in the abdominal wall. There is an entire absence of the anterior wall of the bladder. On either side, and at the lower part of this mass, careful inspection will show the orifices of the ureters. Passing a probe in, as I do now, we can follow these canals for quite a distance on either side. These cases are often accompanied by inguinal hernia, and this child has a double hernia of that description. The testicle is absent on one side; in not a few instances we have a non-descent of both testicles. In some of these cases, the deficiency in the abdominal wall may be several inches in extent, although usually not so extensive. There is invariably a condition of inflammation of the mucous membrane of the protruding bladder on account of friction from the clothing and from decomposition of the urine. There is also to be noted a distinct umbilical hernia. In some of these cases, non-union of the pubic bone may likewise be noted.

Examination of the urine shows the kidneys to be healthy. The urine dribbles away constantly, and when the bladder is pressed upon, a few drops nearly always escape. If these cases are not kept extremely clean, the skin will be excoriated from the constant dripping and decomposition of the urine.

This unfortunate deformity is usually met with in the male, but it may be occasionally seen in the female, when the nature of the deformity is of the same kind. The measures taken to relieve these cases are not accompanied by much success. The prognosis is not very hopeful, as a complete cure is out of the question. Every means must be taken to lessen the irritation to which the exposed parts are subjected. A pad of antiseptic cotton or gauze can be placed over the bladder, and gentle pressure employed. The surrounding parts can be dusted with bismuth, oxide of zinc, or lycopodium. If the children live long enough to walk about, a rubber urinal, having a cup fitting over the opening in the abdominal wall, can be employed, and the urine collected in a receptacle attached to this cup.

Two varieties of operation have been proposed and employed in these cases. The first consists in making the rectum serve as a receptacle for the urine. To accomplish this, the ureters are brought into connection with the rectum by threads. The results, however, of this procedure have not been good, as kidney disease is very apt to ensue, and the urine produces considerable disturbance in the rectum. A more radical operation consists in closure of the abdominal opening by means of a plastic operation, allowing the urine to pass through a small opening. Where the abdominal opening is small, the edges of the skin may be freshened and covered with flaps which are derived from the adjoining tissues. Various surgeons have devised different plastic proceedings; Pancoast derived his flaps from the inguinal region, and united them in the median line with their epithelial faces inward. Other surgeons have worked with flaps of integument derived from the scrotum, perineum, and groin. The operation itself is not unattended with danger, as it has been estimated that about 20 per cent. of the cases have died from peritonitis, sepsis, or exhaustion from loss of blood. As in this case the extroversion is very extensive, and the general condition of the child not very good, I think it best to defer operative measures, particularly as the function of urination is well performed, and the child is fairly comfortable. If these cases live to adult life the condition is a pitiable one; they constantly carry about with them the offensive smell derived from decomposing urine, which is dribbling continuously from the ureters. It is likewise impossible for them to perform the sexual act, although the desire is present.

The next case is an infant of two years. His mother has brought him for "a hard lump" in the scrotum. There are several conditions to be noted in connection with swellings of the lower groin and scrotum at this age. We may have hydrocele of the tunica vaginalis, hydrocele of the cord, an undescended testicle, or an inguinal hernia. An examination of this case shows that we can easily eliminate most of these conditions, as it resolves itself into some change that has taken place

in the testicle. It is an extremely hard, somewhat diffused mass that evidently involves the whole testicle. It may be either tubercular, syphilitic, or sarcomatous. The mother gives a history of having had two miscarriages just previous to the birth of this infant. There is present in one of the eyes a plain case of interstitial keratitis. Besides this the mother gives no history of previous syphilitic manifestations in this infant. Syphilitic infiltration of the testicle is of slow growth. The mother has noticed that this condition has been present for several months, and thinks it is gradually increasing in size. In cases of tubercular disease of the testicle, hard, irregular nodules may generally be felt, which may simply undergo a slow, caseous degeneration, or finally suppurate. There is apt to be pain in the testicle. The abscesses, which are commonly formed by suppuration in the nodules, may be multiple, originating from several foci. Handling the testicle in the case before us produces absolutely no pain. Sarcomata may be occasionally seen during infancy, both of the simple and multiple variety. The tumor may reach a large size, and at the beginning be accompanied by great pain. We shall put this case at once upon the iodide of potassium, and can give a very good prognosis.

The boy I now present to you is ten years of age. The mother has had eleven children: the first six were born at term and have been healthy. Then she had two miscarriages, the first at six and a half months, and the second at seven and a half months. The next infant was born healthy and remained so, and the patient before us was the next child. He has always been delicate, and during infancy was said to have suffered from marasmus. He grew stronger when about three years old, and has been thoroughly well since with the exception of colds. Three weeks ago the mother noticed a swelling over both tibiæ. The skin over these bones was slightly reddened, and somewhat painful upon deep pressure. He did not complain particularly of the pain, but limped about, attending to his ordinary duties. The condition has been growing steadily worse until last week, when he was first brought to the clinic. Since then a decided improvement has been noted, for during this time I have been employing fairly large doses of iodide of potash. This may be considered one of the late manifestations of hereditary syphilis. An ordinary idopathic periostitis would have been accompanied by much more active and urgent symptoms. There would have been rigors, followed by vomiting, headache, and possibly delirium, with a high temperature. Such a periostitis is apt to be accompanied by an osteo-myelitis, and the prognosis is always serious. The treatment is principally surgical, as free antiseptic incisions must be early made in order to relieve the pressure and prevent sepsis. Syphilitic periostitis is controlled, on the contrary, by simple medical treatment, the iodide of potash usually relieving it in several weeks. It involves particularly the tibia and humerus. The specific periostitis is likewise usually multiple and very apt to be symmetrical. If one tibia is attacked, the corresponding bone on the other side will probably also be involved, and the same is true of the ulna and radius. There may be a deposit, accompanying the periostitis, which will change considerably the shape of the diseased bone. Hereditary syphilis is often accompanied by proliferation of new bone, which is, however, of inferior quality. The pain accompanying inflammatory changes is worse at night, this phenomenon being the same in hereditary as in acquired syphilis. In some cases of hereditary syphilis, a low caseous inflammation takes place at the junction of the epiphysis with the diaphysis. This may even go on to suppuration, and is known as osteo-chondritis. Among the rarer forms of bony change may be mentioned dactylitis, which may involve the bones of either hands or feet. This, however, is usually seen in very young children. It begins generally in the periosteum or in the fibrous tissue about the joint. Resolution nearly always takes place.

MEDICAL PROGRESS.

Treatment of Simple Chancre.—In the *Revue Générale de Clinique et de Thérapeutique*, CASTEL, after pointing out that the danger of this lesion resides in great part in its virulence and in the facility with which re-inoculation is possible, proceeds to consider the best applications for its relief. After reminding us of the fact that Ricord habitually employed the charcoal and sulphuric acid treatment for this purpose, and obtained from its use very extraordinary results, he draws attention to the more recent methods of treating the disease, also calling attention to the use of Canquoin's paste. Diday and Fournier recommend the employment of a solution of nitrate of silver, and the latter has found that the application of a 3 per cent. solution produces very excellent results. The lesions should be dressed with a tampon of absorbent cotton dipped in this solution and renewed three times a day. With this treatment simple chancre should be cured in from three to six weeks, and it may be advisable to apply not only antiseptic washes, but oxygen water and solutions of chloral or Labarraque's solution. According to Rollet and Mauriac the following applications are also very useful:

℞.—Water	6	drachms.
Lemon-juice	1½	"
Laudanum	45	minims.
Goulard's extract	1	drachm.

Or,

℞.—Water	1	ounce.
Citric acid	45	grains.
Hydrochloric acid	45	"
Perchloride of iron	45	"

Treatment of Paralysis of the Bladder.—HOCHE divides the treatment of paralysis of the bladder into that which is palliative, and consists in the regular evacuation of this viscus by means of a catheter employed with every antiseptic precaution, and also the curative. The bladder should never be allowed to become distended. For the curative treatment, he uses injections of strychnia and subcutaneous injections of ergot, with cold douches and compresses to be applied to the perineum. Finally, electricity may be resorted to, and under these circumstances the application of the current should not last over ten minutes. The positive pole should be placed over the vertebral column, and the negative pole over the hypogastrium. If the positive pole is introduced into the bladder the negative pole should be put over

the pubes, and the current should not be applied over three or four minutes.—*L'Union Médicale.*

The Dose of the Bromides.—SIMON recommends that for infants under the age of one year the appropriate maximum and daily dose of each of the bromides should be three grains, which should be given in two doses and should be well diluted. Larger amounts may, of course, be given in the event of severe convulsions. For a child of two years the daily dose may be six grains, divided into two doses and given in a vehicle which will be pleasant to the taste, and which should be present in large quantity to prevent irritation of the stomach. The dose should also be given immediately after a meal. For a child of three years, fifteen to thirty grains may be given, divided into three or four doses, during the day. The drug should be stopped every other week. After the age of three years Simon thinks that large doses may be employed and believes that from this age on great tolerance is reached, and that gastro-intestinal troubles are diminished.—*Revue Générale de Clinique et de Thérapeutique.*

The Treatment of Purulent Ophthalmia.—The *Revue Générale de Clinique et de Thérapeutique* gives the following treatment for this troublesome condition: During the initial stage, when the secretion is transparent, antiseptic irrigations of phosphoric acid or the application of compresses soaked in a very cold solution of corrosive sublimate are of value. When the disease is well developed the treatment is both cauterant and antiseptic. The cauterizations are to be made, if possible, twice a day by dropping into the eye a solution of nitrate of silver in the proportion of 1 : 25, or better still, by the direct application of the nitrate of silver stick. After this the eye should be immediately washed out with a solution of common salt to prevent an excessive action of the nitrate of silver.

As an antiseptic irrigation phosphoric acid, naphthol, and corrosive sublimate may be employed, and in the cavities it may be well to employ compresses soaked with solutions of these drugs. For the relief of chemosis scarifications may be employed, and for corneal ulcers cauterizations with nitrate of silver followed by the use of iodoform ointment are valuable. During the period of decline in the disease it is well to continue the applications of the solution of nitrate of silver in the strength of one per cent., as well as the irrigations and antiseptic compresses. If the suppuration continues and there is much pain, relief may be obtained by the application of the following prescription:

℞.—Extract of opium . . . 1½ grains.
Boiling water . . . . 1 pint.

Sometimes the following collyrium is useful:

℞.—Nitrate of silver . . . . 1 grain.
Deodorized laudanum . . . 10 drops.
Distilled water . . . . 3 drachms.

Treatment of Anasarca.—According to *L'Union Médicale*, PECHOLEIN recommends the following application for the treatment of anasarca:

℞.—Veratrine . . . . . 15 grains.
Iodide of potassium . . 30 "
Lard . . . . . 1 ounce.

This is to be made into an ointment and applied with friction.

Liniment for Gout.—The *Lyon Médical* states that the following liniment is useful in the treatment of gout:

℞.—Collodion, Sulphuric acid, Salicylic acid } of each . 1 drachm.
Hydrochlorate of morphine . 15 grains.

This is to be painted over the part affected every few hours.

Application of Ichthyol.—According to the *Revue Générale de Clinique et de Thérapeutique*, UNNA employs the following preparation of ichthyol in the treatment of diseases of the skin:

℞.—Ichthyol . . . . 25 parts.
Starch . . . . . 50 "
Carbolic acid . . . 2½ "
Water . . . . . 22 "

The ichthyol and carbolic acid are dissolved in the water while hot, and the starch added.

Solution for the Removal of Freckles.—

℞.—Chloride of ammonium . 1 drachm.
Hydrochloric acid . . 1 "
Glycerin . . . . 1 ounce.
Fresh milk . . . . 2 ounces.

Dissolve, and apply night and morning to the part of the skin which is affected.

Treatment of Fissured Tongue.—

℞.—Carbolic acid . . . 37½ grains.
Tincture of iodine, Glycerin } of each . 3 drachms.—M.

Paint the affected parts.—*Journal des Malad. Cutan. et Syph.*

Treatment of Erysipelas.—This is the treatment TALAMON also employs in cases of pustular variola. It consists in spraying with Richardson's apparatus for a minute the outer ring, both within and without the erysipelatous swelling, with the following solution:

℞.—Corrosive sublimate, Tartaric or citric acid } of each 15 grains.
Alcohol (90 per cent.) . . 1½ drachms.
Sulphuric ether enough to make . . . 3 ounces 1 drachm.—M.

This solution being caustic should not be thrown into the eyes nor in proximity to the nostrils. Spraying should be repeated two or three times a day.

Cayet considers this as the best remedy employed against erysipelas. If it is used in the beginning, the inflammation will yield during the first day, and the disease will be terminated by the fourth day.—*Revue Général de Therapeutique et de Clinique.*

Statistics of Chloroform Administration.—GURLT, in *Le Mercredi Médical*, reports the statistics of 60 observers from July 1st until December 31, 1890. Of these 60

observers, 3 were Austrians, 3 Russians, 2 Swedes, 1 a Hollander, 1 a Belgian, and the rest Englishmen. The report embraces 24,265 cases of narcosis by chloroform. Bardeleben, who had already reported the statistics of 12,000 narcotizations at the Charity Hospital from 1878 to 1890, found 7 cases of death. These 24,265 narcotizings resolve themselves as follows: Of the total number, there were 22,656 narcoses by chloroform, with 71 cases of asphyxia and 6 deaths; 470 by ether, with no asphyxiations or deaths; 1055 by a mixture of ether and chloroform, with 5 asphyxiations and no deaths; by ether and alcohol, 417 cases, with 4 asphyxiations and no deaths; by bromide of ethyl, 27 cases, with no asphyxia and no deaths.

This statement shows 1 death in every 3776 administrations of chloroform alone, 1 asphyxiation in every 319 administrations of chloroform, 1 in every 211 administrations of ether and chloroform, and 1 in every 104 administrations of ether and alcohol. In the majority of cases chloral was given first, and the chloroform and inhaler of Esmarch were used. In 2732 narcotisms the duration averaged one hour; in 278 cases it was much longer, and in 3 cases it was 150, 155, and 180 minutes. At the Charity one cubic centimetre of chloroform was used for each minute of narcotism. According to Morian, the quantity of chloroform employed with Kappeler's apparatus is only one-sixth of the amount used with the ordinary apparatus. In his private clinic he uses 25 grammes of chloroform for each narcotization. The largest doses have been 150 to 180 cubic centimetres. The mixture was composed of 100 parts of chloroform, 30 parts each of alcohol and ether. He has used concurrently with the chloroform injections of morphine.

Bruns thinks the technique of narcotism susceptible of improvement. New experiments on etherization are necessary. Ether excites the heart's action, while chloroform lowers it. Moreover, ether protects against death from cardiac syncope.

Actinomycosis.—DOYEN reports, in *Le Mercredi Médical*, that he has observed two cases of actinomycosis in men. In the first a tumor was present, adherent to the periosteum at the angle of the jaw, and fluctuating, which, upon section, permitted a ropy liquid with but little color to escape, holding in suspension half a hundred actinomyces. In the second a large abscess had become chronic, having disintegrated the muscles of the tongue and caused symptoms of dangerous dyspnœa. These two patients—one treated by extirpation of the tumor and the other by curetting and packing—both recovered.

Chloride of Ethyl as a Local Anæsthetic.—As a substitute for ether spray as a local anæsthetic, M. Monnet has introduced a method of freezing by means of chloride of ethyl, which is highly spoken of by Dr. C. Rédard, clinical professor at the Geneva School of Dentistry. Chloride of ethyl is a colorless liquid possessing an ethereal odor, with a boiling-point of 50° F. It is hermetically sealed in glass tubes containing ten grammes, one end being drawn out into a fine point. When required for use the point is broken off with a pair of forceps, or by hand, at the narrowest part, which is marked by a file-scratch on the glass, and the warmth of the operator's hand is sufficient to cause a very fine jet of the chloride to be projected on the part to be anæsthetized. One great advantage claimed for this method is that no apparatus is required, and its use is advocated in such cases as tooth-extraction, neuralgia, etc.—*The Lancet*, April 11, 1891.

Chronic Rheumatism and the Nervous System.—A novel and suggestive, if somewhat revolutionary, theory in reference to the dependence of chronic rheumatic joint-changes on a morbid condition of the central nervous system is advocated in a work by Dr. Wichmann, of which an abstract is furnished in a recent number of the *Centralblatt für klinische Medicin*. The author began his work six years ago, with a view of explaining the nervous symptoms associated with rheumatic joint affection, and the dependence of these upon a central cause was first suggested by the occurrence of symmetrical phenomena, such as patches of erythema, subcutaneous nodules, etc. Charcot has explained the occurrence of contractures in rheumatism by supposing that there is an inflammation of the articular nerves, the influence of which is transmitted to the centres in the cord, there giving rise to irritation of the motor roots; and the fact that the contracture is usually in the flexed position is explained by the greater power of flexors as contrasted with extensors. But it is pointed out that this would not explain the occasional occurrence of extensor contracture, and that, moreover, in other conditions giving rise to joint affection, such contractures do not take place. As further supporting the theory of a central lesion for those conditions, attention is directed to the occurrence of arthropathies in tabes and other spinal conditions, and it is contended that a feasible explanation of the vasomotor and trophic disturbances—such as "glossy skin"—as well as of the disturbance of sensibility, is offered by such a hypothesis.—*The Lancet*, April 11, 1891.

Application for Diphtheria.—According to *L'Union Médicale*, SIMON recommends the following application in cases of diphtheria:

℞.—Salicylic acid . . . 7 to 14 grains.
Alcohol, a sufficient quantity to dissolve acid.
Glycerin . . . 1½ ounces.
Infusion of eucalyptus . 2 "

A small piece of absorbent cotton is to be wet with this mixture and applied to the throat and false membranes. The application may be made every three to eight hours during the day, and one or twice during the night. If the false membranes are very adherent they may be touched up two to four times a day by a solution composed of perchloride of iron and glycerin, of each three drachms. It may also be advisable to irrigate the nostrils and throat with boric acid solution in the strength of four per cent. Internally, he advises the administration of tincture of chloride of iron, in the dose of ten to twenty drops every twenty-four hours, according to the age of the patient. One drop may be given each hour in a little wine or broth.

CURRENT LITERATURE.

SATURDAY, MAY 2, 1891.

THERAPEUTICS OF DIPHTHERIA.

THE remedies recommended for the treatment of diphtheria are legion; most physicians come to have the greatest confidence in some one. There comes a time, however, when the favorite remedy fails, and then search is made for a better. Professor F. Löffler refers to these well-known facts, and declares the reason to be that hitherto we have not had accurate knowledge of the cause of diphtheria. Statistics to show the value of a remedy are untrustworthy, because many call a simple inflammation of the throat, with slight exudation upon the tonsils, diphtheria.

Löffler asserts, without qualification, that the bacillus described by him is the cause of the disease. Upon these bacilli the effect of different remedies should be studied. This has been done in different ways, which Löffler briefly mentions, by D'Espine and De Marignac, Babès, and by Boer and Behring.

To combat the diphtheria bacilli two things are required: First, to prevent the bacilli from settling upon the intact mucous membrane of the healthy, and upon the parts of the mucous membrane as yet unattacked in those having diphtheria. This can be done by bringing the healthy parts of the mucous membrane in contact with agents which either prevent the development of the bacilli, or, still better, in a very short time kill whatever bacilli are found upon the parts. It goes without saying that the remedies employed must not injure the mucous membrane, nor, by frequent local applications, occasion any injurious action upon the body in general. Second, the bacilli developed in thick heaps in the superficial layers of the mucous membrane must be destroyed, in order to prevent an extension of the process to unaffected parts, and also to prevent the transmission of the disease to others by the throwing off of bacilli capable of infecting them.

The bacilli grow best at a temperature of 99.3° Fahr., upon a blood-serum mixture, composed of four parts ox-blood serum, and one part accurately neutralized bouillon, to which is added one per cent. each of peptone and cane-sugar, and five-tenths per cent. of salt. Experiments to test the efficacy of remedies should be carried out upon bacilli grown under these conditions. Löffler takes ten cubic centimetres of the blood-serum mixture, places this in a test-tube held in an oblique position, so that the surface of the serum reaches to about the upper third of the glass. A platinum wire is then dipped in a pure culture of diphtheria bacilli and drawn across the surface of the serum in a number of places. In from twenty to twenty-four hours the whole surface of the serum becomes covered with a moderately thick coating of bacilli. In the tube, so prepared, a short time after it has been inoculated with bacilli, the fluid to be tested is poured so that it reaches to the upper border of the serum. The quantity is ten or fifteen cubic centimetres. The duration of the contact of the fluid to be tested with the bacilli was made to correspond with the usual duration of the act of gargling. The fluid was poured off immediately after being poured in, or was allowed to remain in contact with the bacilli for ten seconds. After this submission to the action of the agent, the test-tube was placed in an incubator, and examined in several (usually eight) days. The checking of the growth of the bacilli, if any, indicates the degree of efficiency of the agent. The bacilli was not washed out by the mere pouring in and out of fluid; this was proved by trial with distilled water. The conditions present in this case, it will be observed, represent those present when bacilli have just been deposited on a healthy mucous membrane.

If the bacilli are allowed to grow in the serum for several days they form a coating frequently half a millimetre thick. This corresponds with the coating produced by the growth of the bacilli in the most superficial layers of membranes. The duration of the action of agents upon such cultures was limited to twenty or thirty seconds. After the fluid was poured off, a culture was attempted from the depths of the thickest part of the layer.

The scope of Löffler's researches may be judged from the fact that he experimented with corrosive sublimate, cyanide of mercury, metallic mercury, nitrate of silver, chloride of silver dissolved in subsulphate of sodium, potassium permanganate, potassium chlorate, saturated lime-water, aqueous solutions of chlorine, bromine, and iodine, iodine trichloride, chloride of lime solution, iodine-iodide of potash solution, alcohol, allylalcohol, benzylalcohol, ether, chloroform, carbolic acid, salicylic acid, resorcin, pyrocatechin, hydrochinon, tropeolin, benzol, xylol, toluol, anisol, phenetol, pseudocumol, cumol, oil of turpentine, anilin, thymol, creosol, sulphate of creosol, and thirty-eight ethereal oils. The results of the action of these agents are given in some detail. Some of them were effective when the bacilli were upon the surface, in freshly-prepared tubes; but they were ineffective after the bacilli had formed a membrane.

Löffler's general results may be inferred from his recommendations. As a prophylactic at times of threatening danger, healthy persons should, he says, gargle, for five or ten seconds, every three or four hours, with a 1 to 10,000 or 1 to 15,000 solution of corrosive sublimate, or, perhaps better, because the taste is less disagreeably metallic, with a 1 to 8000 or 1 to 10,000 solution of cyanide of mercury. Chloroform water (1 part chlorine in 1100 parts water) and thymol (1 part dissolved in 500 parts of 20 per cent. alcohol) may also be used. Mosler's method of gargling, accurately described in the *Deutsche med. Wochenschrift*, 1881, No. 1, gives the best results. In the form of vapor, such remedies as oil of citron and oil of eucalyptus are especially active.

When a person is affected with the disease, in addition to gargling with the weaker solutions as mentioned, he should gargle, every three or four hours, with agents capable of destroying the cul-

tures. The most appropriate of the latter class, according to Löffler, are solutions of corrosive sublimate, 1 to 1000; 3 per cent. carbolic acid, dissolved in 30 per cent. alcohol; and alcohol and oil of turpentine, each with 2 per cent. carbolic acid. The throat may also be painted thoroughly and repeatedly with 5 per cent. carbolic acid, 2 per cent. bromine, or 1 per cent. chlorine solutions. Concentrated aqueous solutions of creosol, especially *o*- and *p*-creosol, also deserve mention.—*Deutsche med. Wochenschrift*, March 5, 1891.

NEPHRITIS IN PHTHISICAL PATIENTS.

Dr. C. von Kahlden says there is frequently found in the kidneys of phthisical patients a pathological change which is generally limited to the cortex. The kidney may either be normal in size or slightly enlarged. The surface of the kidney is usually smooth and pale yellow; the capsule can be easily stripped off; the cortex is normal or slightly thickened, and always shows a characteristic slightly yellow color. The medullary substance, like the organs in general, is usually pale and anæmic.

The microscopic appearances are best studied from preparations which have been hardened in Flemming's solution. The changes, which are principally degenerative in character, affect primarily the parenchyma. The interstitial infiltration and proliferation seem to be largely secondary, and dependent upon the degree of cell-destruction; and as evidently the fatty epithelial cells may be replaced for a time by newly-formed epithelial cells, this explains why the symptoms of proliferation in the interstitial tissue are, on the whole, so insignificant. The degeneration and the interstitial changes always occur in foci. The degeneration affects both the glomeruli, and especially their endothelium, and also the convoluted tubules.

The rather large fatty cells, seen frequently in the bloodvessels of the kidneys, are in part doubtless endothelial cells, as their partial connection with the vessel walls proves. Whether these cells come also from other organs, and especially whether they enter the circulation after the parenchyma of the lung is destroyed, must remain undecided; the latter has been supposed to be the origin of similar fatty cells found in the kidneys in pneumonia.

That these changes are chronic is shown by the thickening of the capsule, the atrophy of individual glomeruli, and the transformation in many cases of the club-shaped epithelium of the uriniferous tubules into short cylindrical or cubical cells. The duration of the disease cannot be told by the appearance of the kidneys. Accurate clinical observation, too, is often unreliable, for the disease continues for a long time almost without symptoms. Œdema is very rarely found, even after death. Albumin seems to be present only transiently and in insignificant quantity. Moreover, if slight œdema does occur, it could be attributed to disturbances in circulation, and the albuminuria to hectic fever.

Von Kahlden regards the disease as a chronic parenchymatous nephritis. As to the connection which exists between it and phthisis, he thinks it probable that the nephritis is caused by a ptomaïne produced by the tubercle bacillus. The fact that it is a degenerative process agrees with this supposition.

Both Becquerel and Rayher have declared that tuberculosis and Bright's disease are frequently associated. Peacock found phthisis in 30.7 per cent. of one hundred and seventeen cases of kidney disease; Frerichs met with six cases of phthisis in forty-two cases of Bright's disease; while Bamberger places its frequency at 15 per cent. Von Kahlden goes still further, and declares that degeneration of the kidney epithelium is rarely absent in phthisis which is progressing to any degree. He admits, however, that it may be so insignificant, that the microscopic changes can only be recognized by special attention and care. The fact that hypertrophy of the heart is generally absent accounts for the relative insignificance and focal distribution of the anatomical changes in the kidneys, and also for the general anæmia.—*Centralblatt f. allgem. Pathologie und path. Anatomie*, February 1, 1891.

THE TREATMENT OF MALARIA.

Laveran finds that in the contest between the organism and the hematozoons, the leucocytes play an important *rôle*. It is a well-recognized fact that if an insoluble and finely-pulverized substance be injected into the blood of an animal the leucocytes rapidly invade this powder and charge themselves with its elimination from the blood (Ponfick, Hoffman, Langerhaus).

The researches of Metchnikoff prove that the leucocytes not only invade inert powders and the dead bodies of microbes, but also, in a great number of cases, the living pathogenic microbes, and that this property, known as *phagocytosis*, plays a very important *rôle* in the evolution of infectious diseases and in the phenomenon of immunity. The cells of the splenic pulp and those of the endothelium, of the connective tissue, and of the pulmonary epithelium participate in this power. He has also concluded that the paroxysm of the fever persists during the life of these microbes in the blood, ceasing only when the parasites become the prey of the phagocytes. Especially is this marked in relapsing and malarial fever. The resistance which the microbes exert against this action of the leucocytes may be of long duration if they be lodged in the spleen or in the marrow of bone.

Wyssokowitsch has noticed that the spores of the *bacillus subtilis* lodged in the spleen were still living at the end of three months, an interesting fact in a point of view of the study of latent microbism.

Metchnikoff, Golgi, Gamaleia, and others insist upon the destructive action of heat upon the microbes, while, on the contrary, cold diminishes the activity of the phagocytes. It is well known that an organism placed in the best general condition will resist most successfully the inroads of the pathogenic microbes, whilst all debilitating causes militate against the cure of malaria. Laveran himself has observed in animals whose blood contained hæmatozoa, that under the influence of an abundant ali-

mentation the microbes disappeared, while inanition favored their development. The anæmic diseases—over-fatigue, ill nourishment—are attended with frequent relapses of the fever, and the salts of quinine themselves seem to become powerless in preventing these relapses. On the contrary, under the influence of only a good regimen and rest, frequently the condition of malarial patients will ameliorate, the anæmia grow less, the relapses less frequent, and a cure may occur without the intervention of a more active medication, simply because the organism has been placed in the best hygienic condition.

All the tonics have, consequently, a favorable action upon the progress of the disease, and foremost among these may be placed wine, coffee, and arsenious acid. Arsenic taken in small doses is of great service in the treatment of rebellious fevers with the malarial cachexia. If given in large doses, however, relapses of fever will often be produced, and the condition of the patient aggravated. Hydrotherapy is valuable, always used as a tonic medication. It succeeds sometimes when other medications have failed. It is well to know, however, that the first treatment may provoke a relapse; hence it is necessary to proceed with prudence, beginning with short and lukewarm douches before arriving at cold douches, not touching at first the spleen, and prescribing some doses of quinine at the same time. One can readily understand that a cold douche, especially if applied over the splenic region or following a paroxysm, will cause contraction of the splenic vessels, driving the hæmatozoa into the circulation. The malarial patients who in thermal stations—Vichy, for instance—take these waters both internally and in the form of baths, often have relapses at the beginning of the treatment, when they do not proceed with prudence. The change of climate is often beneficial to these patients, because the great heat of malarial climates is very debilitating, giving rise to exhausting sweats, nights without rest, and dyspepsia—all of which are corrected in a better climate. Quinine is of invaluable service in the treatment of these fevers, especially acting as a specific in the chronic forms. It has a very powerful destructive action upon all microbes, especially upon the protozoa, to which group the hæmatozoa belong. These rapidly disappear from the blood of patients who are submitted to a course of quinine medication. The spherical bodies and the flagellate forms disappear first. The treatment must be continued for some time to insure entire destruction of the microbes. It is probable that the phagocytes invade more readily the hæmatozoa when they have been killed or benumbed by the salts of quinine, but that the activity of the phagocytes is not directly influenced by the quinine.—*La Médicine Moderne*, February 19, 1891.

STRANGULATED HERNIA.

DAYOT, FILS, in the *Archives Générales de Médicine*, February, 1891, reports a series of observations upon the various forms of strangulated hernia. In the space of four and a half years he and his father have performed colotomy twenty-two times to remedy the accidents arising from strangulation of a hernia. In thirteen instances the intestine was absolutely sound, and in most of the cases they were able to reduce the hernia and terminate the operation by the radical cure of the hernia. In three instances the termination of the case was in death—one an old woman of seventy-five years, who succumbed upon the fifth day to a pulmonary congestion, the wound being on the way to complete union; two men, who were quite exhausted, with grave general symptoms, died in collapse, notwithstanding their surgical intervention. The remaining cases were cured entirely and did not merit special attention other than that among them was a congenital hernia of the peritoneo-vaginal-testicular variety, with a large concomitant hydrocele absolutely transparent. The patient, who was thirty-three years of age, had had this hernia since the age of fifteen years, and had already suffered from the accidents of strangulation, which, however, had yielded to taxis. They also operated upon an umbilical hernia in a woman fifty years of age, the hernia being of twelve years' standing. The tumor was as large as a small fœtal head, moderately tender, uniform and resonant. The skin covering it was violaceous, of an elastic consistency, with disseminated points of induration. Very moderate and brief attempts at taxis proving fruitless, colotomy was performed, and at the end of twenty-five days the cure was complete. Upon making the incision a large quantity of sanguinolent ascitic fluid was discharged, and palpation revealed multiple indurations of the sub-umbilical region resembling chronic peritonitis. They believed that there was a hernial peritonitis, attributable, at least in a certain measure, to the peculiar congested state of the peritoneum. The displacement of the intestinal arch by the circulatory troubles which were produced had without doubt favored the predisposition to serous inflammation. This hernial peritonitis had not only produced a simple irreducibility of the tumor, but it had in addition determined intestinal obstruction with all its clinical characteristics. This had arisen from the great thickening of the tunics, the binding together of the two portions of the intestinal loop by false membranes, and a total increase in the volume of the tumor, so that, in spite of its large dimensions, the ring had become insufficient to contain the pedicle without compressing it.

From the experience derived from the series of observations made, they have come to recognize the great danger of temporizing. Without waiting to diagnose between the pseudo-strangulation of Malgaigne and true strangulation, they have at once resorted to herniotomy to settle the doubt which might exist. The most frequent cause of the intestinal occlusion, in their experience, has been external strangulation with acute or subacute course, necessitating prompt interference on the part of the surgeon. Intervention has become the rule, and this line of conduct, which was very clearly outlined in the thesis of Boiffin (1887), applies itself as well to umbilical hernias as to the other forms of hernia. The statistics of herniotomy

for strangulated umbilical hernia have been much improved since the employment of antiseptic methods. In operating in cases where the bowel has become gangrenous, the diseased portion has been removed and the healthy borders of the artificial anus thus formed have been stitched with care to the walls of the hernial sac, at the level of its neck. All penetration of stercoraceous material into the peritoneal cavity is thus prevented. Enterectomy has been the operation selected, in the majority of cases, in preference to enterorrhaphy, although the two may be combined. If enterorrhaphy be first performed it may have to be supplemented by an enterectomy.

SOCIETY PROCEEDINGS.

FIFTH FRENCH CONGRESS OF SURGERY.[1]

(Continued from page 474.)

PROF. VERNEUIL presented a most interesting case of "Spinal Fistula Giving Passage to Arachnoid Fluid." The patient was a young lady. Sixteen months before he saw her she felt a severe pain in the sacral region, which was followed by the gradual development of a tumor, which, when it acquired the size of a small orange, suddenly burst, allowing a quantity of pus to be discharged; pain immediately disappeared, but the abscess discharged until she presented herself to Dr. Verneuil.

He found at two inches from the median line in the right sacral region a fistula which was in communication with a denuded portion of bone situated on the posterior surface of the spine on a level with the third vertebra. The surgeon now explored with the thermo-cautery; and strange to say, instead of finding a denuded portion of bone, his finger penetrated into a depression which was the third posterior sacral foramen. This seemed enlarged and rough, and was, therefore, curetted. The next day, however, it was found that the patient's dressing was perfectly soaked with a reddish serous exudation. He was then told that there had been, on several occasions before this, sudden drenching by a liquid coming from the fistula, and this had been followed by coma a few days later. This Dr. Verneuil had also the opportunity of witnessing; for on the fourth day after exploration she was found in a state of deep coma, without fever or vomiting, but in a singular state of oppression. This liquid was collected with absorbent cotton and examined chemically. It was found to contain cholesterin, a little fat, albuminoid substances, earthy and alkaline phosphates, a little urea, and sugar. Hence, this is a clear case of fistula arising from an acute abscess of bony origin, which gave vent to arachnoid fluid, bringing on cerebral symptoms without other effects on the general system.

DR. BAZY, of Paris, presented the history of two cases in which he made an exploratory opening into the spinal canal. The first one, in November, 1886, was made on a woman for a hydatid cyst compressing the cord and giving rise to motor and sensory symptoms in the lower extremity. The woman died, three weeks after operation, from suppurative nephritis: the catheter was passed several times a day by the nurse without order from the surgeon.

In another patient, twenty-nine years old, syphilitic and hysterical, suffering from paraplegia, with contracture during extension, anæsthesia, etc., it was not settled by our best men in neuro-pathology whether the symptoms were those of hysteria or of a tumor compressing the cord. It was then decided to perform an exploratory operation, which was done, and it gave negative results. The operation, being made aseptically, gave rise to no accidents. The author insists on the fact that when the dura mater has been opened, this membrane should be carefully united without drainage, to prevent exudation of the arachnoid fluid.

DR. DOYEN, of Rheims, presented a case of trephining for serous cyst, in a young man, aged sixteen, who, since the age of seven, had been suffering from epileptic fits, left hemiplegia, and great weakness of intellect. A large cranial projection appeared on a level with the squamous portion of the temporal bone on the affected side. Specific treatment having given no results, the patient was cured two months after trephining, when intra-cerebral albuminous cysts, containing more than 350 grammes (12 ounces) of liquid, were found.

DR. PICQUÉ, of Paris, presented a patient, a lady, nineteen years of age, who shot herself in the frontal region. She was comatose for six days, when she recovered all her faculties. Still there was persistent headache on the right side. Exploration demonstrating penetration of the ball, the diagnosis of intra-cerebral abscess was made. A large trephine was applied, and the frontal bone was found perforated, as well as the dura mater. The cerebral surface appeared intact, except at one part, where the gray substance formed a hernia. The cerebral substance was incised with the knife, allowing a great deal of pus to flow out. The bullet, however, could not be found. In five weeks the patient was absolutely cured, and finds herself well today.

DR. BROCA, of Paris, presented three cases of trephining. He divides the indications for the operation into three classes, and has a history for each: 1. An exterior lesion, which indicates the point upon which to operate. 2. The endeavor to find a cerebral lesion of known or unknown nature, the seat of which can be diagnosticated, by putting together the symptoms produced, according to our present powers of cerebral localization. 3. Operation without the guidance of localization; the nature of the lesion having, however, been diagnosticated, and, from our anatomo-pathological knowledge, we know its usual seat and where to attack it.

In his first case Dr. Broca had one sign of localization —an athetose contracture of the upper extremity; but according to the history of the disease and form of the head, he diagnosticated intra-ventricular hydrocephalus, and thought that the first surgical indication was to relieve the excentric compression of the brain by evacuating the liquid. Using Keen's process, he opened and drained the left lateral ventricle, as the contracture was situated in the right upper extremity.

The second case was an infantile spasmodic brachial monoplegia. The athetose contracture of the left upper extremity certainly resembled the preceding case, but the history of the disease and form of the head pointed

[1] Held in Paris from March 31 to April 4, 1891.

to infantile cerebral sclerosis. Moreover, for the past four years the child had suffered from attacks of Jacksonian epilepsy, which certainly had their starting-point in the thumb. Trephining was resorted to, and a cyst was found on the motor centre of the thumb—that is, at the postero-inferior extremity of the centre for the upper extremity. Epilepsy has almost totally disappeared, the patient only suffering from agitation and a few convulsive movements during the night.

His third case was one of complicated fracture of the skull, which had been trephined at the time of the accident. The immediate result was good, but a few months after, the patient suffered from Jacksonian epilepsy of the inferior maxillary and left upper extremity. He still had a cranial fistula. Dr. Broca removed an infected piece of bone in contact with the dura mater, and the fits have become much less frequent and are becoming less and less marked.

DR. MICHAUX, of Paris, presented the history of a case of "Non-traumatic Meningeal Hæmorrhage Cured by Trephining." This man was brought to the hospital in a state of apoplexy, with left facial hemiplegia and paralysis of the right superior extremity. During the following days the paralysis extended to the right lower extremity; epileptiform convulsions then set in and became more and more frequent. The patient presented no sign of fracture of the cranium nor bleeding at the ear, nose, etc.; neither sub-conjunctival, pharyngeal, nor cranial hæmorrhage was observed. But it is learned that the patient was an inveterate absinthe-drinker. Several months ago he was compelled on two occasions to give up his occupation on account of intense headaches and vertigo. His urine contains 0.65 grammes of albumin and only 2.50 grammes of urea.

The operation was performed on the left side along the Rolandic line; two inches of bone were removed by the trephine and the dura mater was incised. Immediately, large black clots, about two tablespoonfuls, were thrown out. Iodoform dressing was applied. The patient has improved rapidly since the operation, most of the symptoms having disappeared, and the remaining ones are doing so gradually. This was certainly a case of spontaneous hæmorrhage of alcoholic or uræmic origin.

DR. MANOURY, of Chartres, presented the history of a case of "Craniectomy," which demonstrated that the favorable results obtained after the operation are not very permanent. He operated on a microcephalic girl of four years of age, who, at the age of three months, had her fontanelles completely closed. At six months convulsive movements in the two upper extremities appeared. She had never been able to walk or stand, because of a permanent contracture of the muscles of the posterior region of the leg. The child does not masticate her food.

She was operated upon, and an antero-posterior groove four inches long made in the left parietal bone, extending from the coronal suture to the lambdoid. As soon as the operation was over, the little patient became very calm, and did not cry any more. The upper extremity ceased to move, the head became straighter, and the look was more intelligent. The hand could be moved, and the child could masticate its food. The contracture of the gastrocnemii ceased, and the patient was able to remain on her feet. This favorable stage lasted two months, when the former symptoms all returned to their previous state, and mensuration of the cranium did not indicate the least increase in its dimensions from the time of the operation five months previous.

DR. TOISON, of Douai, spoke on a new mode of performing sections of the cranium. The objections to the mode usually employed are, that after trephining there is a permanent loss of bony substance, as the reinsertion of the disc of bone is not practicable by every surgeon. Wagner's process, says the author, is a great advance, as it consists in a temporary resection of an osteo-cutaneous flap, which is returned to its place as soon as the cerebral operation is over. Dr. Toison has repeated the experiment, made by Julius Wolff in 1863, on rabbits. He found that in dogs there was a very firm bony union two or three months after the operation, provided that no suppuration took place; the dura mater, however, does not seem to take part in this consolidation. The speaker has found that sections made by a saw become much more firm than those made with a chisel. He has applied this process to human surgery, and passes a thin flexible saw between the bone and dura mater, through four little perforations which have been made at the four angles of the bony flap which is to be uncovered; when the last point of attachment remains, it is fractured by introducing a small chisel under the rectangular piece of bone; this process has also the advantage of abolishing the hammering of the cranium.

DR. LEDRU, of Clermont, read a paper on "Extirpation of a Rectal Epithelioma through the Anus." The operation was performed after having previously well dilated the parts; but the disease soon recurred, and as the patient refused all other interference, the speaker used an application on the epithelial ulcerated surface of a layer of Conquoin's paste (chloride of zinc, 32 grammes; wheat-flour, 24 grammes; oxide of zinc, 8 grammes). A great deal of pain was experienced at first, but afterward all went well, and two months later there was not the least sign of recurrence of the trouble.

DR. BERTHOMIER, of Moulins, read a paper on "Osteo-myelitis of the Ribs," in which he said that osteo-myelitis developed itself in the ribs as in the long bones; there are often found two points affected on a level with the epiphyseal joints. One is anterior and is well known, presenting itself as a projection on a level with the chondro-costal articulation; while the other point affected is posterior, on a level with the head of the bone toward the pleural cavity, and presents all the symptoms which might be mistaken for a pleuritic effusion, dulness, murmur, ægophony, etc. These two points infected, communicate with each other, although exteriorly we find no trace of such propagation.

The following case illustrates very well the above-mentioned fact: A patient who had been suffering for six days from osteo-myelitis, presented when first seen a well-defined tumor of the size of a very small orange on a level with the chondro-costal articulation of the fifth right rib; second, behind or posteriorly along the spinal border of the scapula, there was a zone of about ten centimetres, where there existed dulness, murmur, and ægophony, while exteriorly there was no trace of

inflammation; third, the least trace of inflammation existed in the middle of the rib—no dulness, no murmur, no ægophony. The surgeon then aspirated the projecting tumor at the chondro-costal articulation, and washed the cavity out with a bichloride solution. Percussion and auscultation in the posterior region immediately after demonstrated the absolute disappearance of the dulness, murmur, and ægophony.

DR. TUFFIER, of Paris, gave his personal experience in "nephrorrhaphy." He has performed the operation fourteen times, and the symptoms which have encouraged him to operate were: first, pain; second, gastric symptoms; third, neurasthenia. All these three symptoms constitute the clinical types of the movable kidney. The painful variety is the most frequent and most favorable for treatment, as in ten of his patients the pain disappeared after operation, while in the four others it was greatly diminished. The dyspeptic variety is rarer, he having had two cases, with one failure. This variety is often accompanied by hepatic lesions. The neurasthenic variety is not very frequent, and comprises all neurasthenic symptoms, including hysterical attacks; in three cases he had two successes.

As regards clinical forms, Dr. Tuffier divides the movable kidney into two varieties; first, the simple movable kidney; second, the complicated movable kidney. The simple movable kidney is of traumatic origin; it is a real dislocation of the kidney, and gives the best operative results. The complicated movable kidney is a slow and progressive displacement, accompanied or followed by a descent of the abdominal viscera: the abdominal parietes are soft, depressible, and there may exist a hernia, a rectal or uterine prolapse, or the stomach may be dilated; the abdomen in those cases is better treated by orthopedic means.

Out of fourteen operations, Dr. Tuffier lost one patient by tetanus on the eleventh day, when the lumbar wound was already closed, the thirteen others having been cured. The painful symptoms have disappeared. He concludes by saying that nephrorraphy is one of the most efficacious amongst renal operations; as, out of a series of 149 operations collected, the mortality has only been 3.4 per cent. It is also very successful, for out of 73 typical operations there were 80 per cent. of complete cures or certain ameliorations.

PROF. HEYDENREICH, of Nancy, read a paper on "Partial Excision of the Pubic Bone for the Removal of a Vesical Tumor." He recommends partial excision when the vesical tumor is very deeply situated; he then resects a fragment of bone two centimetres long and four centimetres broad without danger to the pelvis, by following oblique lines passing outside, or even inside, the spinous process. He says that whenever a surgeon finds difficulty in reaching a deep-seated tumor he need not hesitate to perform this operation, which only takes a few minutes.

DR. PONCET, of Lyons, read a communication on "A New Process of Suturing Tendons." The following operation was done on a young laborer who had the tendo Achillis cut by the stroke of a spade. He was untreated for forty days; at the end of that time the cutaneous wound was closed, but the two ends of the tendon were one inch apart. The operation was performed as follows: A V-shaped incision was made on the posterior aspect of the heel and the flap was dissected up; afterward a vertical calcaneotomy was made by detaching a posterior slice of the calcaneum about one centimetre thick, the osseous fragment being rendered absolutely movable. Then this osseous fragment was pushed up, and the two ends of the tendon were sutured, while the lower end of the bony fragment was fixed to the bone by means of an aseptic ivory peg; the cutaneous flap was next sutured into position. This method, the author thinks, could be applied to certain cases of tearing away of the ligamentum patellæ or the tendon of the triceps brachialis.

CORRESPONDENCE.

DEFEAT OF THE OBLIGATORY THREE YEARS' COURSE BILL IN MISSOURI.

To the Editor of THE MEDICAL NEWS,

SIR: An attempt was made this winter by the friends of reform in medical education to secure the enactment of a law in Missouri defining the term "medical college in good standing" in the existing Medical Practice Act, to mean a college requiring, among other common conditions, that the applicant for graduation must have attended at least three annual collegiate courses. The Missouri Practice Act is copied from that of Illinois, and conveys the same powers to the State Board of Health which have enabled the Illinois Board to set on foot at home and abroad such a grand reform in medical education. The Missouri Board declined assuming the responsibility of following this famous example, but by resolution referred the matter to the General Assembly then in session. A bill was accordingly introduced in the House, was *unanimously* recommended by the House committee, and eventually passed by the gratifying vote of 85 ayes to 22 noes. The bill was subsequently lost in the Senate by a vote of 14 noes to 10 ayes. Legislation was crowded into the last few days of the session, so that the bill came up in the Senate at the very last, leaving no time to obtain a reconsideration. The defeat in the Senate was entirely unexpected, though very powerful political influence was felt to be inimical on purely personal grounds.

The reform movement originated in St. Louis. Encouraged by the appearance in the Illinois State Board of Health Report of the names of most of the medical colleges in Missouri favoring the three years' course (at present all but one do appear), a committee was formed, under whose auspices a circular was mailed to the profession of the State. A large number responded favorably, the negatives being so few as to cut no figure at all. These names and addresses, together with the names of the three years' colleges, were printed in the form of a memorial and presented to the Legislature; also a statement to the effect that in no other part of the civilized world were diplomas issued under at least four years' attendance upon college work; that the right of the States to regulate medical education had been affirmed in the Supreme Courts, both State and national, since the welfare of the people requires protection "against the consequences of ignorance and incapacity as well as of deception and fraud"; that all over the country reform in medical education is being agitated, and in a number of

States already laws have been enacted requiring the three years' course, etc. Of the fourteen medical institutions in Missouri granting diplomas, only one, at the present time, opposes the bill. This, the Marion Sims, was lately organized, graduating this year its first class. Its prospectus opens by declaring that the "chief object" of its organization is "the elevation and securement of an approximate perfection of the standard of medical instruction in the West." Its dean has just sought to further this laudable object by bitterly opposing at the Capitol the Three Years' Bill. By the aid of political friends high in office, and by working on the prejudices of some, he has succeeded for the time: conduct which Secretary Rauch, of the Illinois Board of Health, in a recent address on Medical Education (Missouri Medical College semi-centennial celebration, March 31st), tersely characterized as "dishonorable, unprofessional, and mercenary."

The sum of the argument (!) raised against the memorial presented in the Legislature was this: To require attendance upon a course of three years would work a hardship upon "the poor young man"—it would be class legislation—therefore undemocratic, a most deadly sin. Of course, the voice of civilization demanding better medical training, the decision of the Supreme Court of the United States pointing out the duty of the State to protect its people "against the consequences of ignorance and incapacity"—such testimony as this can have no weight in the grand scheme quoted, "The elevation and securement (!) of an approximate perfection of the standard of medical instruction, etc."

CHAS. A. TODD, M.D.,
Of the Committee on Memorial.

WEATHER ELEMENTS AND TRAUMATIC NEURALGIA.

To the Editor of THE MEDICAL NEWS,

SIR: I herewith send you a paper by Captain Catlin, of the United States Army, who was injured by a round shot in battle in 1864, which accident resulted in an amputation below the knee. [See page 489.]

From this time he suffered more or less from constant neuralgia. Seeing in one of my books a reference to the effect of storms upon this condition, he applied to me for relief. I requested him to keep a record of the influence of storms upon his neuralgia, and the result of this was three papers: One by myself in conjunction with Captain Catlin, based upon his information, to be found in the *American Journal of the Medical Sciences*, April, 1877; the second by Captain Catlin, with a short introduction by me, *American Journal of the Medical Sciences*, June, 1883; and finally the long and very elaborate paper on the effect of storm and electrical conditions upon pain, as well as of the influence of ozone. This paper will appear in full in the *Proceedings* of the American National Academy of Sciences. As, however, it will be a long time before it can be published, and as it is of great length and of a purely scientific character, I asked him to make a brief abstract of it, which I herewith give to the medical public with this short explanation.

If anyone is especially interested in this subject, a reference to the original document will enable him to trace out this research, which was only made possible by the circumstances of the situation. In other words, there was injury, traumatic neuralgia, acquaintance with electrical conditions, and the possession of such patience as is necessary to a study of this kind.

S. WEIR MITCHELL.

SUPERNUMERARY DIGITS.

SIR: In THE MEDICAL NEWS for March 16, 1889, page 307, I reported a case of supernumerary digits, and in THE MEDICAL NEWS for April 13, 1889, page 418, two more cases are reported by Dr. W. F. Drewry, of Petersburg, Va. On September 29, 1889, I attended Mrs. C. (the mother of the case I have already reported) in her third confinement. The labor, although slow, had nothing uncommon about it, but the child, a male, had a supernumerary digit attached to the outer side of the left little finger. It measured about one-fourth of an inch in length; was furnished with a nail; and was attached to the little finger by a thin pedicle.

When the child was about two weeks old, the supernumerary digit was removed without any difficulty.

Mrs. C.'s first baby was born without any such deformity; the second was born with two supernumerary digits; and the third was born with one. The first child having been born without these extra digits, why should the second and third have been born with them? As the second was born with two, why had the third only one? The second and third having supernumerary fingers, why did the first escape?

M. A. DE WOLF SMITH.
NEW WESTMINSTER, BRITISH COLUMBIA.

NEWS ITEMS.

New Jersey State Medical Examining Board.—The following questions were asked by the New Jersey State Medical Examining Board at their meeting on Thursday, April 9, 1891:

OBSTETRICS AND GYNECOLOGY.

George W. Brown, M.D., Examiner.

1. Describe the uterus.
2. What is the corpus luteum?
3. Name the contents of the broad ligament.
4. Describe the fœtal circulation.
5. What changes take place in the vascular system of a child after birth?
6. What are the causes and evil effects of tardy and precipitate labors?
7. Give the pathology of phlegmasia dolens.
8. Give the differential diagnoses of ovarian tumor and tubal pregnancy.
9. Give the causes, symptoms, results, and treatment of pelvic cellulitis.
10. Give the symptoms and treatment of erosion of the cervix.

PRACTICE OF MEDICINE.

William Perry Watson, M.D., Examiner.

1. Locate the valves of the heart and the points at which their respective murmurs are heard with the greatest intensity.

2. Give a characteristic prodromal symptom (non-eruptive) of: *a*, mobilli; *b*, scarlatina; *c*, variola; *d*, varicella.
3. Coma.
4. Râles.
5. Renal casts.
6. Angina pectoris.
7. Spinal sclerosis.

Give varieties, causes, diagnoses, and prognosis of each.

8. Describe Bell's paralysis.
9. Describe Cheyne-Stokes respiration.
10. Give the differential diagnosis between acute, catarrhal and diphtheritic laryngitis.

SURGERY.

Aaron K. Baldwin, M.D., Examiner.

1. Give the treatment of a case of retention of urine.
2. Give the different varieties or hernia, and describe operation for strangulation of any one of these varieties.
3. How would you detect dislocation of the head of the femur into the thyroid foramen?
4. What are the symptoms of cerebral concussion? Of cerebral compression?
5. What is Pott's fracture? Describe treatment.
6. Describe varieties of luxation at elbow-joint.
7. Give varieties of luxation at shoulder-joint.
8. Describe the pathological condition of anthrax.
9. Give the various kinds of ulcers of the leg, and how would you treat one of them?
10. Give the cause, course, and termination of periostitis.

ANATOMY.

A. Uebelacker, M.D., Examiner.

1. Name the muscles of the forearm.
2. Describe the elbow-joint.
3. What muscles are in relation with the elbow-joint?
4. What arteries and nerves?
5. Describe the arachnoid membrane.
6. Describe the pancreas.
7. Describe the ophthalmic artery, and give names of its branches.
8. Describe the superior vena cava.
9. Give the origin and name the branches of the fifth nerve.
10. Give the average weight and principal divisions of the brain.

PHYSIOLOGY.

D. R. Atwell, M.D., Examiner.

1. What produces the first sound of the heart?
2. Describe the coagulation of blood.
3. Trace the fœtal circulation.
4. How is the heart's structure nourished?
5. What is a lymph node?
6. Where is the centre of taste?
7. What juices are concerned in the digestion of starch?
8. Give the normal temperature, pulse, and respiration of an adult.
9. Give location and function of the spleen.
10. What is *complemental air* as related to respiration?

CHEMISTRY.

Eugene Tiesler, M.D., Examiner.

1. Define the terms dialysis, distillation, sublimation, decantation, precipitation.
2. State what you know about soda bicarbons.
3. How is phosphoric acid prepared?
4. Define haloid salt. Give examples.
5. What is alum? How does it differ from alumen exsiccatum?
6. Give tests for albumin in animal fluids.
7. What is Hg? Name four officinal preparations thereof.
8. What is cupric arsenite? Give antidotes.
9. What is aqua regia? Why is it so called?
10. In what form is lime present in lime-water?

HISTOLOGY, PATHOLOGY, AND DISEASES OF EYE AND EAR.

H. G. Wagoner, M.D, Examiner.

1. Describe the nerve-cells.
2. Give the minute anatomy of the skin.
3. Give the minute anatomy of the arterial walls.
4. Describe the lesions of infantile paralysis.
5. What are the pathological processes in cirrhosis of the liver?
6. How many kinds of pleurisy are there, and what are the pathological changes in each?
7. What are the varieties of endocarditis, and what anatomical changes do we find in each?
8. What is myopia, presbyopia, and astigmatism, and treatment for each?
9. What is strabismus and its treatment?
10. What lesion of the ear may result from the use of the nasal douche?

HYGIENE AND MEDICAL JURISPRUDENCE.

A. H. Worthington, M.D., Examiner.

1. Give the best method of disinfecting a room after a contagious disease.
2. What is ozone?
3. Name two of the most valuable disinfectants.
4. What are ptomaines? Give types of different action and origin.
5. What is meant by "hardness" in water, and what are the causes and the different degrees of hardness?
6. State briefly the details to be noted in making a post-mortem examination for medico-legal purposes.
7. In a case of supposed drowning, how could you prove the body was alive or dead when submerged?
8. Name the different forms of insanity.
9. Describe the fœtus and its appendages at the beginning of the fourth month of intra-uterine life.
10. Give the symptoms of poisoning by opium and the treatment.

MATERIA MEDICA AND THERAPEUTICS.

Wm. L. Newell, M.D., Examiner.

1. What is dialyzed iron, and how is prepared?
2. What is cantharides? Its uses and doses when internally administered?
3. What is chloroform? Its specific gravity, uses, and doses?
4. Give the formula and mode of making camphorated tincture of opium.

5. Give the formula of the compound cathartic pill of the U. S. P.

6. Give average internal dose of each of: 1, atropia; 2, morphine; 3, strychnia, for a child four years of age.

7. How is antifebrin prepared? What are its physiological effects, uses, and doses?

8. Describe infusion, decoction, maceration, and digestion.

9. Give five irritant poisons and the antidotes of each.

10. Write a prescription containing nitro-glycerin, and give the symptoms to be relieved.

HOMŒOPATHIC MATERIA MEDICA AND THERAPEUTICS.

A. H. Worthington, M.D., Examiner.

1. Explain the difference that exists between the primary and secondary action of a medicine, and give an example.

2. Name the most important remedies, with their doses, for dysentery in an adult.

3. Differentiate the brain symptoms of cuprum aceticum and stramonium.

4. Give the thoracic symptoms of bryonia alba.

5. Give the enteric symptoms of colocynthis.

6. Describe the characteristic inflammation of belladonna.

7. Give the urinary symptoms of cannabis sativa.

8. Name the most valuable remedies in diphtheria—the simple and malignant forms.

9. Describe a disease in which hydrastis canadensis is the indicated remedy.

10. Give the skin symptoms of antimonium crudem.

The Medical and Surgical Reporter.—With the issue of *The Medical and Surgical Reporter* of April 25th, Dr. C. W. Dulles severed his connection as editor with that journal. During the three years Dr. Dulles has edited it he has not only proved himself to be possessed of a facile pen and editorial ability, but has doubtless given satisfaction to the subscribers of *The Reporter*. The next issue will appear under the editorial charge of Dr. E. T. Reichert, of the University of Pennsylvania, whose contributions to medical literature during the last few years have not only been interesting, but valuable. Dr. Reichert brings to *The Reporter* a mind well trained for the carrying out of his duties, and possesses the faculty, so necessary to the successful editor, of making friends through never-failing courtesy.

Jefferson Medical College.—At a meeting of the Board of Trustees of Jefferson Medical College held April 22d, Dr. H. A. Hare was elected Professor of Therapeutics and Materia Medica, to succeed Dr. Roberts Bartholow.

DR. J. M. BALDY, of Philadelphia, has been elected Professor of Gynecology in the Philadelphia Polyclinic and College for Graduates in Medicine.

A New Sanitary Journal.—The first number of a monthly periodical, devoted to sanitation, has been published at Dublin, Ireland. It has been named *The Health Record*, and will be edited by Edgar Flinn, M.R.C.S.I., of Kingstown.

Medicine has the Right-of-Way.—At Berlin, a corporation ordinance has been adopted which will give to the carriages of physicians the right-of-way through streets that are crowded. In order that these carriages may be at once distinguished from others like them, the coachmen who drive them will don a white hat. This new headgear has been proposed for the prevention of embarrassing delays of medical men in the principal thoroughfares, and will become a recognized demand for the right-of-way at all times.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM APRIL 21 TO APRIL 27, 1891.

BUSHNELL, GEORGE E., *Captain and Assistant Surgeon* (Camp Pilot Butte, Wyoming).—Is granted leave of absence for twenty-one days, to take effect on or about May 1st next.—Par. 9, *S. O. 49, Department of the Platte, Omaha, Neb.*, April 20, 1891.

By direction of the Acting Secretary of War, ALFRED A. WOODHULL, *Major and Surgeon*, is detailed to represent the Medical Department of the Army at the International Congress of Hygiene and Demography at its meeting in London, England, from August 10 to 17, 1891. He will leave his present station not later than June 1, 1891, and will proceed to London. After the adjournment of the Congress, he will return to his proper station. While abroad under this order, and before returning to the United States, he will visit, on official business, such points in Great Britain as may be deemed necessary by the Surgeon-General of the Army.—Par. 17, *S. O. 91, A. G. O., Washington, D.C.*, April 22, 1891.

By direction of the Acting Secretary of War, WILLIAM L. KNEEDLER, *Captain and Assistant Surgeon*, is relieved from duty at Jackson Barracks, La., and will report in person to the commanding officer Fort Logan, Col., for duty at that post, reporting also by letter to the commanding general Department of the Missouri.—Par. 2, *S. O. 88, Headquarters of the Army, A. G. O., Washington*, April 18, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING APRIL 25, 1891.

MCMURTRIE, D., *Medical Inspector.*—Detached from Navy Yard, New York, and ordered to the U. S. S. "Lancaster."

KERSHNER, EDWARD, *Medical Inspector.*—Detached from Marine Rendezvous, and ordered to Navy Yard, New York.

HERNDON, C. G., *Surgeon.*—Detached from Naval Hospital, New York, and ordered to Marine Rendezvous.

GARDNER, JAMES E., *Passed Assistant Surgeon.*—Ordered to Naval Hospital, New York.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication, or 250 reprints will be furnished instead of payment, provided request for reprints be noted by author at top of manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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ORIGINAL ARTICLES.

A STATISTICAL HISTORY OF YELLOW FEVER IN PHILADELPHIA, WITH A REPORT OF TWO CASES RECENTLY TREATED AT THE EPISCOPAL HOSPITAL.[1]

BY ALBERT STAVELY, M.D.,
RESIDENT PHYSICIAN EPISCOPAL HOSPITAL.

WITH the exception of Asiatic cholera, perhaps, no epidemic disease of modern times elicits more widespread interest, or is attended with a greater fatality, than yellow fever.

To illustrate the frightful ravages this disease may occasion, I need only call to your mind the epidemic that visited London in 1660, in which 97,000 out of a population of half a million perished; that of St. Domingo in 1802, when 20,000 out of a population of 40,000 fell victims; or that of Constantinople in 1812, when the mortality was nearly 160,000.

Our city of Philadelphia had passed through only seventeen years of its existence when, in 1699, yellow fever, then an obscure disease, first terrorized its inhabitants. The records of this first epidemic are very meagre, being confined to a few letters written by unprofessional men. At that time there were less than 4000 inhabitants, and the mortality was 200.

For the next forty-two years there was complete exemption, and the memory of the first visitation had almost faded out, when a second occurred in 1741, and 240 died. On neither of these occasions was there a satisfactory cause for the disease obtainable.

There were some cases of the fever in 1747, but we know nothing of the number. This time the inception of the disease dates from and is attributed to the arrival of a vessel from the West Indies.

In 1760 there were a few cases.

In 1762 the disease originated in the sailors' quarters, and was apparently traced to a sick sailor recently arrived from Havana. We have no statistics of this attack, but it is supposed that several hundreds died. Then there was a lapse of thirty-one years without a case. In 1793, in the midst of seeming security, the city was visited by the most appalling epidemic ever known in its history. The population then numbered 50,000, and at least 4000 died.

When the people were fully convinced of the destructive nature of the disease, a panic occurred, and in a few weeks as many as 12,000 had sought refuge in the country.

Estimating the population then at 38,000, which is perfectly fair, the death-rate would be one to nine and one-half inhabitants, or about fifty-two deaths *per diem* during the yellow fever season, a period of about eleven weeks. At this time the fear of contagion was so great that people locked themselves up in their houses, both sexes smoked tobacco religiously, burned it in the houses and streets, used vinegar or camphor for inhalation, carried tarred rope around in their pockets, chewed garlic, walked in the middle of the street, tried to get to the windward side of any chance passer-by, and adopted other precautions quite as ridiculous. A West Indies vessel was assigned as the cause for this invasion.

In 1794, 1795 and 1796, there were a few cases.

1797 ushered in another epidemic, which occurred coincidently with the arrival of a vessel from the West Indies. About one-half the population sought safe quarters. Of those remaining about 1300 died.

In 1798, upon the arrival of the fever, two-thirds of the whole population, at least 40,000, fled, and of the remaining 20,000, 4868 were reported to the Board of Health as being affected, of which number 3600 died.

In 1799, again, there was a general exodus, and the city was left almost deserted. About 1000 died.

1800 and 1801 alike had about twenty deaths.

In 1802 the mortality was about 835; in 1803 about 190; in 1805 about 400; in 1806, 1807, 1808, 1809, and 1811 there were a few cases. In 1819 there were twenty-four cases, of which number twenty died.

In 1820, of 125 attacked, there were eighty-three deaths.

There were two cases in 1826, and after that, with the exception of one case, which slipped through quarantine in September, 1841, and was treated at the Pennsylvania Hospital, twenty-seven years passed without any yellow fever.

In 1853, upon the arrival of the Mandarin, a Cuban vessel, the disease broke out again. 170 cases were reported, and 128 died. Most of these cases were treated in the city hospitals, and without

[1] Service of Casper Morris, M.D., and Frederick A. Packard, M.D.

any communication of the disease. With the exception of Dr. La Roche's report of the fever in 1870, the records of cases from 1853 are almost entirely confined to a few hospital reports. A number of cases were treated at the Philadelphia Hospital, but the old records are not obtainable. The Pennsylvania Hospital admitted twenty-four cases in 1854, mortality fifteen; six in 1855, mortality six; four in 1856, mortality three; one in 1857, mortality one; one in 1858, mortality one; four in 1859, mortality three; one in 1868, mortality one; and one in 1870, mortality one. In 1858 a case was admitted to the Episcopal Hospital.

In 1860 a sporadic case occurred in the practice of Dr. Bournonville. The subject, a German, resided on Front Street and was employed in a board-yard at the foot of Green Street. Some time before he was stricken he was engaged in rafting lumber on the river, but in no way came in contact with any yellow fever. He became sick on September 1st.

On the last of September, the "Waterwitch," a vessel from Cienfuegos, Cuba, arrived at the Lazaretto, and landed five cases, of which one died.

On June 29, 1870, the brig "Thome" arrived at the Lazaretto, loaded with logwood, and in a filthy condition. The captain died of yellow fever on the way. Shortly after her arrival the fever broke out among the stevedores engaged in discharging the cargo, the bargemen, and the officers and employés of the Lazaretto. Altogether, twenty-nine were attacked, and eighteen died. On looking over the Municipal Hospital records, three cases were found to have been admitted there in 1870, one on August 10th and two on September 8th.

On August 25, 1878, an entire family named Bonelli, consisting of eight members, was taken to the Municipal Hospital from 804 South Eighth Street. They were refugees from Vicksburg, where the disease was then rife, and were all taken to the hospital on suspicion. Two of them had yellow fever of a mild type, and recovered in eighteen days. The rest were detained two weeks, and were discharged as having no disease. On September 21st of the same year a case was sent from 464 North Fourth Street. On August 21, 1879, a case was received from 509 South Front Street, which died at the end of six days.

The following note of the case is taken from the records: "Quite yellow; profuse black vomit; great irritability of stomach."

On the 6th of October, in the same year, a case was sent there from the Jefferson Hospital, and died in five hours. This memorandum was found: "Unconscious while here, unable to swallow, quite yellow, and after death became more so."

This is a summary, as near as can be obtained, of the cases of yellow fever that have occurred in Philadelphia since the first epidemic in 1699. There have been detained at the Lazaretto during eleven years, from 1873–1883, inclusive, twenty-five cases, and since the latter date not a case has been reported.

The following are histories of two cases of yellow fever, admitted to and treated at the Episcopal Hospital in Philadelphia, during the month of August, 1890.

On the morning of the 20th of August, 1890, the British steamship "Blakemore," from the port of San Diego, Cuba, arrived at Philadelphia with a clean bill of health, having on board, among others, two men, one the engineer, the other a deck-hand, both of whom afterward developed yellow fever. On questioning the patients about the existence of the fever at the ports they had visited, they replied that they had neither seen nor heard of any cases. Just before the vessel left San Diego there was a case of sickness on board, which was treated and cured by a physician of that place, but it in no respect resembled their disease.

CASE I.—Peter M., aged twenty-three years, was admitted on the afternoon of August 22. On Tuesday, August 19, after previous symptoms of anorexia, malaise and constipation, he had a marked chill, followed by fever and sweating, which recurred on the 20th, 21st and 22d. On admission his tongue was slightly coated, appetite wanting, bowels constipated. He had severe frontal headache, great tenderness in the epigastric, hypochondriac and lumbar regions, and general aching. There was vomiting of a brownish fluid. The skin was lemon-colored, the conjunctivæ were deeply jaundiced, and there was a slight injection of the conjunctival vessels. The patient was perfectly rational, but was very restless, and complained of sleeplessness.

A powder of calomel and bismuth subnitrate was ordered every three hours, and quinine sulphate gr. iv. every six hours. On the 23d he had a return of the chill, fever and sweat, and a continuance of the vomiting, the vomited matter assuming the appearance of coffee-grounds. In the afternoon the temperature was 103°, the pulse only 60, and the respiration 28. The pulse was regular, and of good volume.

The two following days were marked by no unusual symptoms. The vomiting persisted.

On the 25th he had a dark-colored movement.

August 26. At 5 A.M. he vomited a large quantity of fluid, which was described by the nurse as very dark in color, with streaks of light-red blood running through it. Whitish froth floated over the surface of the fluid, and in a few minutes an abundant black and tarry-looking sediment formed. He complains frequently of hoarseness and soreness of the throat. The fauces are considerably inflamed, and the gums very tender. He has been very much annoyed by hiccough, which was relieved

for a time, and re-excited by percussion over the liver. Musk finally controlled it. The pains in the back and knee-joints are very distressing. The pulse-rate is normal, but the heart is becoming very weak. The conjunctivæ are very much injected. The milk which he had been taking came up in tough curds, and rice-water was ordered instead, but, finally, nourishment by the mouth had to be discontinued entirely. In the morning he had two movements similar to the one of the preceding afternoon. Examination of the urine revealed the presence of a small amount of pus and a large quantity of albumin.

27th. Extreme restlessness has been a constant symptom. Vomiting continues, but is accompanied by no retching. Breathing is becoming difficult. The pulse is 80, and very feeble. The face is dusky. Toward the end the patient became stupid, then comatose, and about one-half hour before death he had a convulsion in which his limbs jerked violently. The head was turned to the right side, and there was violent twitching of the orbicularis palpebrarum muscles and general tremulousness. The tongue was firmly held between the teeth, a small quantity of blood escaped from the mouth (probably from the wound inflicted on the tongue), and at the same time he had an involuntary movement of about two drachms of blood. He had three convulsions, one following closely on the other, and the third closing the scene. During the whole course of the disease, with the exception of the few hours preceding his death, the patient was conscious, and unusually cognizant of everything that occurred.

On the second day, under the impression that the case was one of intermittent fever, the blood was examined microscopically for malarial bodies. None could be found; but in the field of the microscope several large bodies could be seen, somewhat larger than the normal white blood-corpuscles, containing finely granular pigmented matter, and possessing amœboid movement. The shape varied greatly, at one time being perfectly round, again oval, then elongated, dumbell-shaped, or crescentic.

Post-mortem examination: Well nourished. The skin retained the original deep-yellow tinge, save at the dependent portions, where it had assumed a dark-purple color.

The lungs were dark-red, very much congested, and were crepitant.

The heart was slightly dilated.

The liver weighed three and one-fourth pounds, was fatty degenerated, and was light-yellow.

The gall-bladder was full of dark-green bile.

The spleen was normal in size, somewhat elongated, very dark colored, soft, and very friable.

The kidneys were of natural size, rather pale, and colored yellow. Otherwise they seemed to be normal.

The stomach contained four or five ounces of coffee-grounds fluid, and its walls were covered with mucus. After washing out the organ, the mucous membrane appeared very much degenerated, dirty-white in color, with reddish foci of capillary congestion, and one or two ecchymotic patches.

The intestines were pale, and contained a thick, sticky, slate-colored fluid.

The mesenteric glands were dark in color, and slightly enlarged. A small hæmatoma was noticed in the mesentery. The tissues were uniformly yellow.

CASE II.—David M., aged forty-two years, was admitted on the morning of August 25, 1890. He had complained of anorexia and headache for a few days, and on Saturday evening, August 23d, he had a severe chill, followed by nausea and vomiting. He had only one chill, and since has complained of fever. On admission his temperature was $99\frac{4}{5}°$, pulse 68, respirations 22. His tongue was lightly coated in the middle with whitish fur. His skin was lemon-colored, and where it was exposed to the air it was bronzed. There was decided pitting on pressure. His face was somewhat flushed, but deep pressure revealed the yellow color beneath. His conjunctivæ were jaundiced, and the conjunctival vessels injected. Bowels were extremely constipated. He complained of intense pains in the epigastric and hypochondriac regions, dull and aching pains in the lumbar region and in some of the joints, especially the knees. Shortly after admission he began vomiting profusely a coffee-grounds fluid, first on one side of the bed, then on the other. The vomited matter gushed forth without any effort on the part of the patient, and hardly fifteen minutes elapsed between each act of vomiting. After midnight he vomited a quantity of blood, which was described as looking like tar. At 2 A.M. on the 26th the vomit was like blood much diluted with water—claret-colored. The milk which was given him came up in tough masses. Earlier in the evening his respirations, which had been normal in rate and easy, became very labored and 30 to 35 per minute.

On examining the chest the next morning (26th), there was marked dulness over the whole chest and feeble breathing; his pulse became very weak, but the rate was not much increased, being about 80. He was very restless, constantly tossing from side to side, and was unable to sleep. He became comatose, and died so about 1 P.M.

Post-mortem examination: A well-developed, muscular man.

The heart was normal in size, and quite firm.

The lungs were intensely congested throughout their entire extent, barely floating in water.

The spleen was normal in size, very black, and much degenerated.

The liver weighed three and one-half pounds; very light yellow in color.

The stomach: Mucous membrane degenerated. A few small ecchymoses were noticed—color dirty-white; contained about half a pint of coffee-grounds matter.

The intestines contained a thick, semi-liquid, slate-colored material.

Mesenteric glands were blackish.

Kidneys weighed eight ounces each; light yellow in color, capsule non-adherent.

NOTES ON THE RADICAL OPERATION FOR THE RELIEF OF HERNIA.[1]

BY H. W. BOONE, M.D.,
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IN this paper I hope to give a brief sketch of my experience among the Chinese in the treatment of hernia by the open method. Hernia appears to be common among the Chinese, but only a small proportion of those suffering from it ever apply to a foreigner for treatment. In examining people in the out-patient department one occasionally finds that they have a hernia, but the majority of these cases decline any treatment for their trouble. As they do not use any kind of truss, and as surgical relief is unknown to the native doctors, the number who die annually from strangulated hernia in this nation of three hundred millions of people must be very large indeed. From time to time we see the report of a case which has been operated upon by some foreign surgeon, but at best only a very few have been so treated. This whole subject of hernia amongst the Chinese, with the best way to obtain their confidence and to get them to apply for relief, and the methods of relief which will be best for them, is well worthy of our careful study and attention. I will relate a case that will serve to illustrate the method which I have commonly used when an operation was necessary, and then proceed to the general consideration of the subject:

W. A. F., male, aged forty-two, married, servant; has been in the chain-gang for some time; is poorly nourished; has led a dissipated life, and has smoked opium. He has a congenital inguinal hernia on the left side, which has given him trouble for the past two years; suffers from colicky pains and dragging sensations in his back and sides. The hernia is reducible. He desires to be operated upon for the relief of pain.

October 3d, assisted by Drs. Jamieson, Reid, Alsopp, and Whitney, under chloroform and with full antiseptic precautions, I cut down upon the sac, which was densely adherent to the surrounding parts. The cord was carefully separated, the sac freed, and, having ascertained that the bowel was returned to the abdominal cavity, the sac was twisted and transfixed at the highest point which could be reached, with a double chromic catgut ligature, the strands of which were interlocked, and then the neck of the sac tightly tied and cut across below the ligatures; the long ends of the ligatures which secured the sac were then made to pass through the pillars of the ring, were drawn tight and tied firmly. The remainder of the sac was left *in situ*, a drainage-tube was inserted, the wound sewed up, and a dressing of iodoform wool, absorbent cotton, and gauze bandages was applied, with an elastic bandage over all. The temperature on the sixth day was 101.9°, owing to a slight inflammation of the testicle, with a little fluid in the tunica vaginalis. On the eighth day the temperature was normal, and from that time there was no further trouble. On the twentieth day a small portion of the end of the sac was removed with scissors from the track of the drainage-tube, and on the twenty-eighth day the parts were firmly healed. The patient was kept in the hospital until the forty-fifth day, and was discharged cured, with no impulse on coughing and no sign whatever of the hernia.

The hospital record shows six cases operated upon and discharged as cured, and one death after operation. In this latter case I tied the sac with catgut, but omitted purposely to suture the pillars of the ring, relying on some statistics which went to show that this was not necessary for the success of the operation. The patient had a good deal of retching and vomiting after the chloroform, and the catgut slipped, with the result that the bowel was exposed in the neck of the sac. He died from peritonitis. I now use strong silk made perfectly aseptic, as it seems less liable to slip or to untie than the catgut ligature, and I prefer to stitch the pillars of the ring with strong sutures.

The above operation has often been called "the radical cure." This is evidently a misnomer, for the percentage of relapses, even in the hands of the most experienced operators, is large, some writers placing it as high as 31 per cent., though others claim better results. In the words of Mr. Mitchell Banks: "The operation is not, in the proper sense, a radical cure, since the inguinal ring is not closed." Mr. Banks's conclusions as to the nature and value of the operation are well worth quoting:

"1. The wearing of a well-fitting and well-acting truss is by no means so great a burden as is represented.

"2. The operation is very seldom indeed required in children. A well-fitting truss, worn for a sufficiently long period, will cure the vast majority of herniæ in children. In a few cases where the omentum is adherent, or where the hernia is very large, or where no proper precautions are observed with reference to the wearing of a truss, an operation may be performed.

"3. In small femoral ruptures with adherent omentum, the operation is especially to be advised. The same rule applies to inguinal ruptures with adherent omentum, and to such as are of very large size.

"4. No patient should be operated upon if the rupture can be well kept up by a truss."

These remarks apply quite as well to Chinese patients, and it seems to me that if we had a supply of suitable trusses, and took the utmost pains in fitting them accurately to our patients, at the same time using every means within our power to get them to return to us for observation, the number who would require a radical operation would not be very large. From time to time I have given trusses to patients, some of whom have returned, and they seemed to be kept in a comfortable condition by the

[1] Read at the monthly meeting of the Shanghai Medical Missionary Association, January 20, 1891.

use of the appliance. A greater number never returned to report, and I am unable to find out what benefit, if any, they derived from the appliance.

In the case of infants, I have used for some time the treatment advised by Mr. Coates. A folded skein of wool should have the end with the loop laid over the emptied inguinal canal, the other end being carried above the opposite pubes across the front of the adomen, round the back and over the hip of the affected side. The free end is then passed through the inguinal loop, carried round the inner side of the thigh, and over the buttock, to be firmly secured to that part of the skein which is already just above the great trochanter. This does not chafe nor hurt the child, is easily readjusted, and can be applied so as to exert accurate compression, and in due time cure the hernial protrusion.

In conclusion, I may say that my purpose has been to speak of my own experience, and not to weary the reader with the general statistics of the operation. It is the fashion at present to present long and elaborate tables of statistics, and these are very useful. As, however, we in Shanghai have the advantage of access to a fairly large number of medical periodicals, and to a reasonable number of the latest books on medical and surgical subjects, I shall suppose that we are well acquainted with the general trend of the professional mind on this question. When I was at home three years ago I had the privilege of seeing the various operations for the cure of hernia performed by some of the leading men in America, England, and France, and of learning their opinions upon the subject. Although the operation of Macewen has (in his hands) possibly achieved better results than any other operator can claim, the operation has not been so successful in the hands of other equally prominent men, and it is doubtful if any one method can claim great superiority over that of its competitors. While all have their drawbacks, the operator must select the operation best adapted to each individual case, and here he can show his skill and good judgment.

VON GIETH'S DRESSING FOR THE CHEST IN PNEUMONIA AND PLEURISY.

BY W. THORNTON PARKER, M.D. (MUNICH), M.M.S.S., OF SALEM, MASS.

IN THE MEDICAL NEWS of March 21, 1891, is reprinted an item from the *Annals of Gynecology*, of February 18th, concerning "A New Method of Dressing the Chest in Pneumonia and Pleurisy," and recommending successive layers of pure collodion and absorbent cotton. It is undoubtedly true that there are many objections to this method, and it will readily occur to anyone that such a procedure is not only expensive and inconvenient, but not always available.

Von Gieth, Professor of General Medicine in the University of Munich, has given the treatment of chest diseases considerable attention, and his very great experience in the wards of the General Hospital of Munich lends additional weight to his eminent ability as a practitioner. Von Gieth does not approve of the many applications so well known to the profession, and is especially averse to the heavy, wet, and uncomfortable poultices of Indian meal, flaxseed meal, etc., so often employed in this country. Any wet application must rapidly cool and then the poultice ceases to be of benefit, and can be of more or less injury.

The one application which Von Gieth recommends, and which has proved so valuable in many cases, is *pure* olive oil (oleum olivæ). In all diseases of the chest, whether in infancy or old age, olive oil stands first and foremost, not only as especially soothing and agreeable, but as being best suited to maintain equable temperature where warmth is most needed.

Since 1872 I have witnessed the value of this treatment in many cases, and nothing can supply the place of olive oil in my practice as a grateful and healing local application in diseases of the chest, either acute or chronic. The oil must be the pure olive oil, and not some one of the substitutes so frequently offered as "just as good." Vaseline, lard, "goose-grease," "camphorated oil," are all preparations greatly inferior to pure olive oil, and cannot act in the peculiarly healing and soothing manner which we are able to obtain when we employ the latter.

The method which has been found most convenient is to pour the quantity of olive oil required into a moderate-sized bowl, which has been previously warmed, which will take off the chill from the oil. A large strip of soft cotton cloth (an old pillow- or bolster-case will give just what is required) is then prepared, to completely encircle the patient's chest. The strip is then placed in the bowl of oil until it is completely saturated, or rather supersaturated, with the material. This is then applied to the patient's chest, and outside this strip a second one is placed of dry cloth, and when necessary a third strip may be used. Flannel and linen are not suitable in this treatment—old, soft, white bleached cotton is what is needed. The strips are secured and held firmly in place by safety-pins.

This treatment will be found most acceptable to patients and successful in results. At first the idea of the oil next to the skin may be repulsive, but very shortly patients learn to like it and recognize the comfort its application is almost certain to induce.

I have called attention to this practice in the medical journals from time to time, and my experi-

ence in practice has convinced me that there is nothing better for external application in these serious and so often fatal diseases. Prompt action with the olive oil, hot-water bags, hot beef-tea, and whiskey punch, with simple expectorants, like the lozenges of mist. glycerrhiz. comp. made by Wyeth & Co., has often held the threatened attack of pneumonia successfully at bay, and has been the means of saving many lives. *Nursing*, and *not dosing* is the common-sense treatment of pneumonia. We are constant witnesses of cases, especially in old and delicate people, where this course of treatment, if used promptly and thoroughly, would be sufficient to save life, and where the need of it has been followed by a fatal termination.

It is well worthy of careful attention by medical men, and I think, without doubt, the employment of olive oil in chest diseases is steadily increasing.

TOPICAL TREATMENT OF DIPHTHERIA AND CROUP.

BY B. M. BEHRENS, M.D.,
OF CHICAGO.

IN presenting this paper I wish it accepted as an argument in favor of an exclusively topical treatment possessing the aim of destroying the diphtheritic infiltration wherever it is found.

It will be agreed to by the medical fraternity that we have heard all we wish to hear about the general treatment of diphtheria and croup, and in spite of all assertions to the contrary, there is not one honest physician bold enough to proclaim this or that pet remedy as infallible. Whether it be given internally, or locally as gargle, vapor, or spray, it is sure to fail, except in cases of slight extent or infection, or in cases where Mother Nature herself succeeds in expelling the disease—but this is a complete failure so far as the efficacy of the remedy is concerned. There are, perhaps, physicians who still hold to the old creed, that diphtheria is a constitutional disease, with secondary local manifestations in the throat, and therefore they adhere to their pet remedy as being superior to all others; but in the minds of those who hold the other view, that diphtheria is primarily a local disease, and the constitutional symptoms secondary, it is evident that the present mode of treating it is inadequate. It is therefore, in my estimation—and my opinion is entertained by many—a Utopian dream to suppose that a remedy ever will be discovered whose specific action is of such a nature that it will check or counteract the production of toxic material or prevent its absorption. By this I mean a remedy of a chemical nature, and not one which may be discovered by bacteriology. Periodicals, and even the newspapers, are filled with "sure cures for diphtheria," that are tried to-day, to be laid aside to-morrow as sadly wanting. For, what can we expect but increased filth from remedies, taken internally or applied as gargles, sprays, and the like, the action of which on the diphtheritic plague can never be more than superficial? Whoever believes in any further effects is the victim of self-delusion, or of gross ignorance of the characteristics of the disease. And even if we must allow, to sprays at least, some mechanical effect—for instance, on the superficial layer of the diphtheritic infiltration—is it not more than likely that these will have no effect on infiltrations hid away in the deep pouches of the tonsils, or back of them? Besides, the danger lies not in the superficial layer of the infiltration, as we see it, as this contains only epithelium, pus cells and detritus, but in the deep layer of the mucous membrane, where absorption of the toxic products takes place, and the diphtheritic bacilli multiply. For this reason, and because as a usual thing the fauces are first attacked by the diphtheritic infection, what is demanded of us is the complete destruction of the infiltration, even if it must take place at the cost of some healthy tissue beside.

Some time ago I had the pleasure of presenting a paper on hypertrophic tonsils, in which I incidentally mentioned three cases of diphtheritic tonsillitis, with all the characteristic symptoms of the disease, which had come under my observation, and in which the disease was cut off, so to speak, by tonsillotomy. This result was, to my mind, satisfactory evidence that a removal, or, what is next best, a thorough destruction of the diphtheritic infiltration, is the sure cure, and that nothing else will answer. I regard it as an indorsement of the destructive procedure I have always followed in my practice, and from which I have never swerved, unless compelled by circumstances. I have never seen any reason to alter my views, or to abstain from this proceeding, unless the disease had assumed such proportions that it was beyond the reach of treatment of any sort. There are exceptions to every rule.

The shortcomings of my procedure are admitted in cases that come under observation late, and where the toxic symptoms pursue such a rapid course that we are only in time to witness the last struggles of the victim of the disease, although, even in the most desperate cases, agreeable surprises have taken place not infrequently. We give stimulants as long as there is a spark of life, and we are just as much justified in our efforts to destroy the infiltration as long as life exists. Unless the patient is moribund, and all hope of saving life is gone, I never hesitate in applying my method; and when I say that I have never regretted it, even in the most desperate cases,

this is the best recommendation I can give it. We must remember that even in such extreme cases as diphtheritic infiltration of the throat, nose, and larynx, the principal locality where the absorption goes on is in the throat; I mean in the tonsils and in their immediate surroundings, not only because this place is usually the first infected, but also because this part is most richly provided with glandular structure, which not only furthers the absorption of the diphtheritic poison, but also is the least likely to be interfered with by any remedy whose aim is only a superficial action, and not a total destruction of the infiltration itself. It is, therefore, in my estimation, no contra-indication that the diphtheritis extends above or below; on the contrary, by checking the main source of absorption, so much is done toward checking the spreading of the infiltration, that we can then regard infiltrations in other localities with a certain degree of ease. In short, I mean to say, that the disease is more than half conquered when we can succeed in destroying the infiltration *in* and *around* the tonsils. This may be deemed a bold assertion, but I can only say it is my conviction. But it will be willingly admitted, that with such complications as I have spoken of, the control of the disease is lost, more or less, so far as topical treatment is concerned. The difficulty increases in the same proportion that the infiltration extends, and the natural deduction from this is that the destroying process is best adapted, and most likely to give the best results at the onset of the disease. What is easy and feasible to-day, is perhaps out of the question to-morrow. If it were practicable, I should say, Never go to a case of diphtheria without the galvano-cautery; but I must limit my advice to nitrate of silver.

If this method be adopted, it will be a question for future solution as to what cautery is best adapted for the purpose of destroying the infiltration. I must hold to nitrate of silver, as being a remedy whose action is deep enough for the purpose, which does not extend further than we wish, and any superabundance of the agent can be immediately neutralized with a harmless stuff—common salt. My experience is limited to this, and because of its having served me so well in my practice it has become my pet remedy; but, of course, I am willing to give it up for another cauterizing agent, should one prove to be better. But the question here is only as to the merit of my proceeding.

To come, now, to the details of the application of my method, I will state that I never call on any case of throat disease without my head-reflector, tongue-depressor, cotton and cotton-holders, and the nitrate of silver. This I have mitigated with 10-per-cent. nitrate of potash, so that it will not so easily crumble or break. While it is melting I dip my probes in it, one with a blunt, another with a cone-shaped, sharp point; this last for the purpose of bringing the cautery deep into the follicles of the tonsils. The ends of the probes are roughened, so that the nitrate of silver will not fall off. The first thing I do is to place the light so that I can with ease throw it from the reflector into the throat. As objections in some form usually are met with in small children, I place them with the lower half of the body on somebody's lap, while I take the child's head between my knees—the position we employ in treating eye diseases in children. By pressing the tongue down and mopping off most of the detritus, I can at once get an idea of the extent of the infiltration. The first object of my attack is the locality in and around the tonsils, and I always satisfy myself that the work is done here thoroughly for the above-mentioned reason. Next comes, in the same sitting or later, the cauterization of other localities. A little while afterward I apply with the cotton-stick a solution of common salt.

As above said, we have, to some extent, lost control where diphtheria extends upward to the nose or downward to the larynx—at any rate, so far as topical treatment is concerned; so I shall only add a few words about this complication of the disease. The treatment here must be symptomatic, and according to the severity of the symptoms. If the nostrils are clogged with mucus and pus, I apply a nose-douche of some non-irritant disinfecting fluid in grown-up patients; in small children the air-bag alone will do in many cases, and *must* do, as injecting in a child's nostrils usually meets with a stubborn refusal. From the effects of nitrate of silver in other localities, we may infer that this agent would be likely to do much good here also, but it would not be advisable to employ it in sufficient strength to be of any use, because of its irritating effect on the non-affected parts, as it often causes quite severe pain. With our inability to treat this part properly, it is consoling to know that there is no immediate danger to the patient's life, or very little, compared with the danger involved in diphtheria of the larynx.

Diphtheritic and croupous infiltrations are clinically the same disease. The œdematous swelling of the laryngeal mucous membrane that accompanies the infiltration, together with the paralysis of the abductor muscles, are the main factors in bringing about the threatening suffocation. When I propose to apply here also the same agent, I am well aware of the difficulties and uncertainties of the procedure. Still it has been of so much service to me in my long practice that I feel compelled to recommend it. It is only fact, and not fiction, that cases that seemed to demand an immediate tracheotomy were benefited by the introduction of a 20-per-cent. solution of nitrate of silver repeated as often as the symptoms

required. For introducing this solution into the larynx I employ a bent cotton-holder having about the same angle as that which is used for introducing a tube into the larynx. After having soaked the cotton batting in the solution, I squeeze out most of it again, pull the patient's tongue out as far as it can be done without too much discomfort, and by a rapid movement introduce the instrument into the larynx. A choking spell, that soon passes away, indicates the success of the proceeding.

In many cases it is not practicable to pull the tongue out, but this same treatment can be made a success by simply pressing the tongue down with the tongue-depressor. As there is no harm in repeating it, if the first attempt fails, since the diphtheritic infiltrated fauces can easily stand a 20-per-cent. solution, it must not be given up until the choking announces its success. But, on the other hand, the more rapidly such manipulations are made the better for the patient and physician. How often these applications are to be made depends upon the severity and duration of the symptoms. To keep down the swelling in the larynx an external application of ice-bags, changed as often as required, will be found of very great utility, and children, after becoming used to them, will very often crave for them again, if they are taken away, although there is in any other way not much comfort connected with their use.

This is a general outline of my method of treating this disease. It would take me too long to detail it further, and I would probably trespass too much upon your indulgence if I further mentioned the advantages, and certainly, also, the shortcomings, of this proceeding, in dealing with a disease that just as often leads to good results under the most innocent and expectant treatment, as it baffles the skill of the most expert and conscientious physician. I have no statistics with which to support my statements. I can only say that for fifteen years I have treated no case of diphtheria in any other way. When one physician states that he lost some cases because his patients would not take the medicine, and another one that he never lost a case treated with this or that drug, then the value of statistics becomes very problematic. Only in hospitals for diphtheritic patients, where one or the other proceeding would be given a fair trial, would statistics be of any value. But, so long as no such opportunity exists, individual claims for this or that remedy or procedure must be considered of doubtful merit. I do not expect any unconditional acceptance of my views, but I do expect an unconditional surrender of the old ones. We owe thanks to the bacteriologists who have branded this disease as a filth disease, that is, one bred by filth and breeding filth, and one whose invasion usually starts in the throat. There is no loop-hole through which we can escape the urgent necessity of doing away with the filth. Nobody would think of soaking a diphtheritic ulcer externally with some indifferent drug, but he would cauterize it in one way or another to bring about healthy granulations, and thereby check the hideous disease. And why not, then, do the same thing in the throat? What excuse is there, other than customary laziness or hopeless fatalism, for not even taking the trouble to inspect the throat, and for prescribing some innocuous drug that can only increase the filth, at best, but that can never have the effect of checking the production of the toxic material, or of preventing its absorption? We scoff at Christian-science healers and faith-cures, but if this way of treating diphtheria is not faith-cure, then I do not know what it is.

Before finishing my paper, allow me to mention what I consider a real advance in the treatment of this disease—that is, the use of the spray. It does not meet all the requirements, but I cannot help regarding it as a step in the right direction. It has a sound basis, so far as it intends to remove the filth, and aid in its expulsion and in the sterilization of the infiltrated part. But I fail to see how we can expect from it any effect at all comparable to that which destruction of the infiltration yields. I am more inclined to believe that these two agents—cauterization and the spray—employed simultaneously, would give the best results, but I have not employed the spray so often that I am prepared to speak more definitely about it. But, then, the spray would have to be employed almost continuously, and not only once in a while and by inexpert hands. If such a proceeding can hardly obtain any footing, it must rather be ascribed to the difficulty of practising what we preach than to the failure of the method.

Another achievement that apparently indicates progress is the intubation of a diphtheritic larynx. The dexterity which this implies would find a better field if it were used for the purpose of effecting a change for the better in the diseased condition of the larynx. This it cannot do, and has, therefore, no more justification than that of being a bloodless relief from suffocation. The enthusiasts do not claim more for it either, so far as I know, unless it is to raise the percentage of successful results upon those intubated, after it becomes more commonly adopted and improved in its working details. This has not been effected up to this time. About 30 per cent. saved sounds better than 70 per cent. not saved. In this it stands equal with tracheotomy, but in the infliction of suffering upon humanity it stands far above the latter procedure. How far it will succeed in replacing tracheotomy is a question the future will solve; but even if it does do so, I cannot see any grand achievement in the method as

a way of dealing with a filth disease. By either of these two methods the disease is being complicated, certainly from necessity, as long as fatalistic prescribing reigns supreme. But when the view once shall be commonly accepted, that a diphtheritic infiltration in the throat ought to be as severely dealt with as a diphtheritic ulcer externally, then there will be less call for either of them. If we are to attain this end, then it is our duty to arm ourselves with the head-reflector, to see for ourselves, to make the diagnosis, and to carry out the treatment, and not merely prescribe something. This reached, something better is sure to follow.

DEATH FROM INHALATION OF GASES GENERATED BY A GASOLINE STOVE.

BY N. K. MCCORMICK, M.D.,
OF NORMAL, ILL.

MY attention was called to this subject by an accident, distressing in its results, which occurred in Normal, September 17, 1890.

At 8 o'clock in the morning of that day I was called hurriedly to the house of William Young. On my arrival I was first shown an infant aged four or five months, and was told that the child's parents were up-stairs and were thought to be dead. The child was almost lifeless, was barely breathing, and I could not detect any heart-beat. His hands and feet were cold. We applied heat and rubbed him with alcohol and hot water. This soon revived him, but we were obliged to continue the rubbing at intervals for an hour or more. As soon as I could leave the child, I went up-stairs and found the bodies of his parents in a small room, lying side by side on the floor, before a gasoline stove. The woman was lying on her right side, with her face away from the stove. The man was lying flat on his back, his shoulder and arm being thrown across her knees. It was evident from the position of the bodies that the woman had fallen first.

Before I arrived the neighbors had practised artificial respiration, but their efforts were of no avail. The room was small. The windows had been tightly closed. On a cupboard stood a lamp, which was still burning when the bodies were found. The stove was a "Globe, No. 5," manufactured by the Standard Lighting Company, of Cleveland, Ohio. The gasoline tank was entirely empty.

The developments at the inquest were substantially these: Mr. G. was a student of the Normal University. With his wife and baby he was keeping house in two small rooms. These rooms were not directly connected, but to go from one to the other it was necessary to pass through a narrow hallway. The front room they used for a sitting-room and bed-room and the back room for a kitchen. In the morning they were heard in the back room as early as 5 o'clock, and as late as 6 o'clock a young lady passing through the hall heard them talking with each other. At this hour there was no odor of gas in the hall, though the young lady noticed that light shone through the doorway. On examination we found that the door did not fit well, and that considerable force was required to completely close it.

About 7 o'clock Mrs. Young heard the baby crying for a long time, and going up-stairs found it lying in its crib in the front room. She wheeled the crib through the hall to the door of the back room and at once noticed the smell of some gas. Getting no response to her rapping, she threw open the door, and saw the bodies lying on the floor. She left the baby lying in its crib in the doorway, rushed down the stairs, and gave the alarm. Neighbors hurried in, took the baby down-stairs, and threw open the windows of the room. The man who was first in the room stated that he heard a noise as of gas escaping from the stove, and he at once closed the valves of the burners. He did not know whether there was any flame at the burners or not. A young lady who was next in the room stated that a lamp standing on the cupboard was burning, and that she turned down the flame.

The question was put to the man, "Did the gas smell like the vapor of gasoline?" His answer was "No; it was more like the smell you get from a hard-coal stove when you see a blue flame." The young lady did not hear him testify, but in reply to the same question, she said: "No; it was the same smell you notice when you first light a fire in a hard-coal base-burner stove."

From what I know of this case I am convinced that death was due to the accidental inhalation of some poisonous gas. It could not have been simply the vapor of gasoline, for the lighted lamp would surely have ignited that had it been present in any quantity.

Gasoline consists essentially of a mixture of three forms of hydrocarbon—pentane, hexane, and heptane. The normal product of combustion of gasoline is carbonic acid gas. To effect complete oxidation, an enormous quantity of oxygen is required, a hexane hydrocarbon requiring nine and one-half volumes of oxygen to one volume of gas.

There are three gases which might have been formed, any one of which could cause death if present in sufficient quantity. These three are acetylene, carbonic acid gas, and carbon-monoxide.

Acetylene exists in coal gas, and possesses a high illumininating power. It is formed by the imperfect combustion of organic gases or vapors, and gives the disagreeable odor detected in a room where a lamp has been burned "low" for some time. Liebreich, so long ago as 1868, pointed out that acetylene forms a combination with the hæmoglobin of the blood, and in quantity it must be considered a poison.

Carbonic acid gas (CO_2) is essentially the product of decomposition. Among its sources of production are respiration, fermentation, and oxidation of

vegetable and other organic bodies. It constitutes the choke-damp or after-damp of the miners, and is the principal cause of death in coal-mine explosions.

In cases of carbonic acid poisoning, if the gas be pure, it causes death instantaneously. It produces spasm of the glottis, and death is immediate from apnœa, none of the gas being able subsequently to enter the lungs. When this gas, somewhat diluted, is inhaled, there is immediate loss of muscular power. The patient drops without a struggle, unable even to call out. When the gas is still more diluted the patient complains of tightness in the throat, or heaviness and pain in the head, of drowsiness, of ringing in the ears, and there is a gradual loss of muscular power. There is lividity of the countenance, violent cardiac action, hurried respiration, and, in rare cases, convulsions and vomiting. These symptoms are followed by a state of complete coma. The amount of carbonic acid gas which must be present in a room must be viewed from two standpoints.

First: Where air is contaminated simply by the addition of the gas.

Second: Where, as in this case, the carbonic acid gas is produced in the apartment by combustion or respiration, or by both.

Here the normal oxygen of the air is consumed in the production of the carbonic acid gas, so that, while the amount of gas in the room is increasing, the amount of oxygen is decreasing, which makes the increase of the proportional amount of carbonic acid gas in the apartment very rapid.

Each adult requires for safe respiration 20 cubic feet of air each hour. An ordinary candle will vitiate the same amount of air in this time.

The room in which this accident occurred was closed tightly except a very small space about the doorway, which was noticed only from the fact that light shone through it. The room measured 10 by 13 feet on the floor, with the ceiling eight feet high, giving a total capacity of 1040 cubic feet.

Tending to vitiate this air we have:

First. The respiration of two adults.

Second. The burning lamp.

Third. Four burners of the gasoline stove.

Two adults would vitiate in one hour 40 cubic feet of air. The lamp would vitiate fully 60 cubic feet. A stove burner, in its consumption of gasoline, represents a power equal to thirty or forty candles, so that each burner will, in one hour, vitiate 600 cubic feet of air, and the four burners would vitiate 2400 cubic feet.

While we have a room containing only 1040 cubic feet of air, we have agents capable of vitiating more than twice that volume in one hour. The fact that the door was slightly ajar does not permit us to hold so precise an estimate as the above to be strictly accurate, but the opening was so slight, and the agents of vitiation so overwhelming in their force, that the conclusion reached must be the same.

The carbonic acid gas has a specific gravity of about 1.5, and would be more dense near the floor, so that a person stooping over would necessarily inhale more of the gas than when standing erect. While this alone could cause the accident under consideration, there is a third gas which must also be considered.

Carbon monoxide (CO) is a colorless gas, having a slight odor. It is breathed into the lungs freely, and is a very active narcotic poison. It is generally held that the poisonous action of carbon monoxide depends on the formation in the blood of a compound of the gas and hæmoglobin, giving the blood a bright-red arterial appearance. This compound is fixed and stable.

We are all familiar with cases, or accounts of cases, where poisoning has resulted from the inhalation of carbon monoxide thrown out from a hard-coal base-burner. Two such cases have already occurred in this county during the year.

In these cases the formation of the gas can be easily explained. Air enters at the bottom of the grate and carbonic acid gas is formed; this passes up through the grate, and taking up more carbon, becomes carbon monoxide.

It is my belief that in this case the deaths were due to the presence of both forms of carbon gas. Primarily, the carbonic acid gas was present as the product of combustion, but not in a quantity sufficient to cause death of itself, for in that case combustion would probably have ceased.

After the stove had been burning for some time, the supply of oxygen became limited, and the product of combustion was carbon monoxide rather than carbonic acid gas.

I believe that Mrs. G. noticed the odor of the carbon monoxide, and stooped down by the stove, possibly to adjust a burner, and while in this position inhaled enough of the gas to be overcome by it at once. Her husband stooped to aid her, when he was also overcome by the fatal gas and fell across her body. Death in each case was practically instantaneous.

It is a matter of great regret to me that I did not make a post-mortem examination of the bodies, at least to the extent of examining the condition of the blood. That alone could have decided positively the exact cause of death. Had the blood been wholly arterial we would know that death was caused by carbon monoxide gas, while if the blood was wholly venous, we would know that the carbonic acid gas was the cause of death.

Some weeks later I was called to another house about the same time in the morning.

Arriving there, I found a woman reclining on a bed. I was told that she had fallen over suddenly, but that she recovered consciousness soon after the messenger started for me. She stated that she was subject to such attacks and needed no treatment. Before leaving I noticed a gasoline stove, of the same make and pattern as that used by Mr. and Mrs. G. I examined the stove carefully; it was burning well, and no odor of gas of any kind was perceptible, even close to the burners.

I have since learned that soon after I left the house the woman again lost consciousness and that her son fell to the floor as in a faint.

Neighbors rushed in and at once pronounced it another case of gasoline poisoning. These neighbors stated that there was a strong smell of gasoline in the room. The patient, and the woman who was attending her, both state that at no time could they detect any unsual odor.

The doors stood wide open, and I do not understand how any such accident could have taken place in a room so well ventilated. I am positive that the patient's first attack was not due to any such cause. Her son was badly frightened when I was there, and I think it quite possible that he fainted on seeing his mother's condition.

I have been told of this case, which occurred in Bloomington:

A large, strong man was overcome by gas while bathing in a small bath-room. The water in the tub was heated over two large gasoline burners. This accident was undoubtedly due to the presence of one or both forms of carbon gas. The room was small and the oxygen present was quickly consumed by the large burners of the heater, leaving an atmosphere heavily charged with carbonic acid gas. Happily, he was heard to fall and was rescued at once. He was unconscious at the time, and had he not been promptly removed from such an atmosphere would surely have perished.

I cannot see that in the case of Mr. and Mrs. G. any blame can be attached to this special make of stove, for such an act can and will occur with any other make of stove under the same conditions. Neither do I think we should condemn the use of gasoline stoves in general.

The practice of heating water in bath-rooms with the gasoline heaters I believe should be condemned, for the reason that extra-large burners are used, consuming the oxygen very rapidly, while the rooms are almost invariably small and poorly ventilated. There is, also, the danger that the victim might fall face-down in the tub, in which position a few inches of water would suffice to drown him.

I cannot learn of any other accidents similar to that happening to Mr. and Mrs. G. This is probably due to the fact that these stoves are used almost exclusively during warm weather, when the doors and windows of houses are open, affording free ventilation. This calamity was essentially due, not to the use of the gasoline stove, but to the insufficient supply of oxygen. What I wish to urge is not the disuse of gasoline as a fuel, but the importance of an abundant supply of fresh air; for with proper ventilation such an accident cannot occur.

ORIGINAL LECTURES.

SOME OF THE PRINCIPAL VARIETIES OF DELUSIONS MET WITH AMONG INSANE PATIENTS.[1]

BY HENRY M. LYMAN, M.D.,
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I SHALL detain you but a short time in considering some of the principal varieties of delusion that are met with among insane patients. We find there are delusions among patients who are the victims of mania which have a characteristic form; there are delusions which are met with among cases of melancholia that have characteristic features; there are also delusions among the victims of general paresis which have marked and peculiar characteristics; and lastly, there are the delusions of paranoiacs that have decided family characteristics. The delusions of mania and melancholia are the most varied and have the least stability in their type. Patients who are maniacal present the delusion of exaltation as a general rule. They fancy they are gifted with great powers; that they have made great discoveries, or that they are endowed with remarkable qualities. But they have no very definite and sustained framework for this delusion. The delusion to-day is about one thing, to-morrow it is about another thing, and the next day still another object. I remember the case of a patient who was maniacal. It was what might be called a case of mania secondary to pneumonia. She labored under the delusion that she had been in heaven and was entrusted with a message to her husband, but though frequently alluding to this, she never could give any form to this narrative, and she did not describe the experience she had in heaven. The only thing she could say was that she had been in heaven and was entrusted with a message from God to her husband. She could not tell what the message was. After a few days the mania subsided and she recovered without any persistent form to the delusion.

Then again, in cases of melancholia the delusion is in like manner unstable. It is not definite and has no persistent framework. It is usually of a desponding character. The patient is overwhelmed with a sense of misfortune, of wrong-doing perhaps, and yet can give no definite shape to it. I have seen patients laboring under this form of delusion who would complain of

[1] Remarks made at a recent meeting of the Chicago Pathological Society.

having done something that was very wrong indeed. They felt bad, but could not tell exactly what they had done.

A gentleman came to see me (brought by his physician), a banker, a man of wealth and fortunately situated, who was suffering with the characteristic ill-health manifested by cases of melancholia. He was oppressed with this feeling of something wrong, a general discomfort which he could not name, describe, or give reason for. I asked him if his business troubled him. He said "No, it was not that;" and his physician assured me that it was not his family affairs, as they were pleasant and harmonious, yet he had a sense of oppression without giving a definite account of the fragmentary delusions under which he was laboring.

In general progressive paresis we find there is a marked state of delusion; it often assumes a more definite shape than do the delusions of true mania or melancholia.

I remember a patient suffering with mania when I first visited him, who said that he had discovered a method for squaring the circle, and he undertook to explain the matter to me, but as soon as he tried to do so he got confused and could not explain it. The next day he was forgetful entirely of his delusion of squaring the circle and imagined himself to be an electrical apparatus. He would place his knuckles near the face of the person near him and say "Don't you feel that shock?" The next day he would forget all these notions, and the delusions under which he labored would assume an entirely different shape. In general paresis patients labor under some distinct and definite delusion which assumes a shape that is oftentimes constant, but it does not usually persist for a long period of time and does not so thoroughly dominate the life of the patient as do the delusions of paranoia, yet these delusions often systematize themselves very considerably in general paresis. I once went to see a patient who was suffering in the early stages of general paresis. He was very considerably excited, and labored under the delusion that he had considerable property under his control, and this property was in his back-yard. He had established there an extensive tree plantation. He took me into his yard and showed me the trees he had there. There were trees from Sweden, Germany, and other valuable trees brought from different parts of England, Scotland, and the Eastern States. He then told me his plans. He was going to establish a saw-mill and cut a canal through to the Mississippi River. He showed me the canal he had started behind the back-fence in his yard. There was a little muddy canal and this was supposed to reach the Mississippi River, and barges and steamboats would come up to take away the property he was going to manufacture there, and he was going to amass an immense fortune in that business. This was a very systematic and constant delusion under which he was laboring, but it was a secondary consequence of a primary disease. Such delusions terminate in a comparatively short time with failure of the mental powers —in fact, the patient lapses into a condition of complete general paresis, the mental faculties disappear, and at last the patient forgets about his delusions, has no more of them, gradually sinks, and dies.

When you observe a paranoiac you soon discover that his delusions are of a more definite and constant character than those which I have mentioned. They frequently persist as long as the patient lives, and the patient's condition is not a consequence of some other form of brain disease, but it is the result of a faulty development of the brain structure itself. A large number of paranoiacs are born with such a defective condition. They have perhaps inherited their form of brain disease or defect; or they have acquired it through faulty habits of life, and the children that are born of such persons have a predisposition in certain morbid directions, which is the primary cause of their trouble. They are not physically diseased; that is, they have no morbid tendency to particular forms of inflammation, degeneration or other change in the brain structure, but their brain was constructed originally upon a faulty plan, and out of that defective formation has developed the peculiarity of the delusion to which the patient finally becomes subjected. The delusion that exists is a permanent thing, so to speak, continuing as long as the patient lives. Unless he contracts some intercurrent disease he may live in comparatively perfect health, and may attain to a reasonably old age. That is why the delusions are so persistent, and why they have the characteristic of being what is called systematized. We speak of the delusions that occur in mania, in melancholia, and the majority of those that occur in general paresis, as being unsystematized. They are dependent upon varying conditions in the brain. The brain disease is the cause of the delusions, and as the brain changes its condition through disease, excitement, or depression, the delusions will correspondingly vary, finally becoming extinct with the extinction of intellectual life. But in the case of the true paranoiac his bodily health is perfect, his brain is not the seat of inflammation or any particular degeneration, but he goes along leading this warped and twisted life, his perceptions giving rise to delusions which grow out of the defect in the action of the logical machinery of the mind in the brain. For instance, Dr. Clouston tells us of a man who insisted that two and two did not make four, but four and a quarter. He was an expert accountant and kept the books of the asylum with which he was connected, using the ordinary system of mathematics, but it was all wrong. He spent much of his time in working out problems in Euclid and in constructing logarithms according to the theory that two and two made four and a quarter. When he died he left immense manuscripts to the University of Oxford. Now, this man had a twist in the construction of his brain, and as a consequence of that defect the perceptions derived from the external world gave rise to delusions which were not to be considered as the products of disease, but rather as consequences of defective organization of the brain.

A CASE OF FRACTURE OF THE ORBITAL PLATE OF THE FRONTAL BONE, WITH RECOVERY WITHOUT AN OPERATION.

BY FRANK W. THOMAS, M.D.,
OF PHILADELPHIA.

THE following case which I report is of interest, not only because it is somewhat unique, but because of a certain medico-legal bearing which it may have, as illus-

trating the possibility of serious injury to the skull and its contents, without sufficient external lesions to even suggest the nature of the injury; and because its lesson is somewhat opposed to a rule laid down by Dr. Deaver in a paper read before the Philadelphia Neurological Society, on January 27, 1890, in which he makes the following remark: "I trephine when I suspect extra-dural hæmorrhage in fractures of the orbital plate of the frontal bone."

About eight o'clock in the morning of November 20, 1889, I was summoned to see W. L., a carpenter, who, while working in a house in the course of erection near the old "Indian Rock," Chestnut Hill, fell from a height of over thirty feet, striking his head upon a plank.

The lesions and symptoms presented were:

(*a*) Swelling and ecchymosis of the right peri-orbital region and cheek, and very slight excoriation above the brow.

(*b*) Impacted fracture at the right wrist-joint.

(*c*) Contusion of the arm, chest, and leg on the right side.

(*d*) Sensation was complete, and while the patient was somewhat "dazed," he was able to describe his position and fall, with sufficient accuracy to tally with the descriptions given by the companions who bore him home.

At this time there were absolutely no symptoms of compression.

The arm was dressed, the contusion about the orbit treated by warm stupes of the distilled extract of hamamelis, and the patient was given internally kali bromid., gr. xx., with morph. sulph., gr. $\frac{1}{16}$.

In the evening I found the patient quiet and sleeping, but easily aroused, and less capable of sustaining mental effort than in the morning. For some fever and rapid pulse I gave drop doses of tr. aconit. rad. and tr. belladon. every two hours.

By the morning of the next day (28th) the somnolence had developed almost into coma, nourishment being swallowed but automatically.

The decubitus was lateral (principally on the right side), the arms were drawn up and flexed over the chest, and the limbs drawn close to the body; the tongue dry. The patient remained in about the same condition for forty-eight hours, and then somnolence began to be less profound.

By this time the swelling had so far subsided as to admit of the outlines of the orbit being examined; and I was surprised to find, at the point of the supra-orbital notch, a depression into which the little finger could be placed, and a bulging was felt within the roof of the orbit pressing upon the eyeball. The right eye was pushed down and was lower than the left; but at that time, owing to the swelling which still existed, I regarded the deformity as apparent rather than real.

December 1 and 2. The patient had lost somnolence, and had become actively delirious, tossing from side to side, constantly talking, with hallucinations, and all the symptoms of cerebral irritation.

7th. The patient much improved. Intellect clearing, but concentration of thought and ideas of time completely absent. He remained quiet, but was easily aroused and quickly "dozed off" again; recognized those about him, but astonished them by the most irrelevant questions. Dr. A. F. Muller was called in consultation, and together we carefully examined the skull, and found, in addition to the injury described, that the whole right frontal bone seemed to be depressed, and the line of the medio-frontal suture appeared as an elevated ridge.

The question of trephining was considered; but as nothing was to be gained, we determined to await results, which have since proved in every degree satisfactory.

The patient slowly, but steadily, improved, the mind daily growing more clear, and muscular contraction, which had been lost to a certain extent, became more and more perfect.

Double vision remained, and I had my friend, Dr. C. S. Turnbull, examine the patient's eyes, the report of which I append:

"Eye (R.) mechanically displaced downward and slightly outward, and muscular action limited on account of pressure of the roof of orbit. Homonymous images (double), and R. displaced more or less below L. and normal position. Refraction Hy. As. Ophthalmoscopic examination negative."

The points of special interest in this case are:

First. The possibility of a blow upon the sharp supra-orbital ridge, sufficient to cause fracture and downward displacement of orbital plate, without cutting the skin, particularly as the character of the fracture would lead to the belief that the patient in falling struck the edge of the plank.

Second. The presumable extra-dural hæmorrhage, as evinced by a succession of symptoms:

(*a*) Momentary stunning at time of fall.

(*b*) Immediate regaining of consciousness.

(*c*) Gradual supervention of coma.

(*d*) Succeeded by slow awakening of intellect.

Third. The question of appropriate treatment. Had the trephine been used and recovery taken place, to surgical interference would have been given the glory. Had operative interference been called for by the urgency of the symptoms, I think that the operation suggested by Dr. A. F. Muller, of introducing an inflexible, flat elevator above the ball of the eye and moulding the depressed fragments back into place, would have held out the greatest probability of a successful result.

At the present writing, six months since the accident, the patient seems intellectually completely recovered. He has been steadily working at his usual occupation since last May, but a certain amount of deformity remains. His double vision, under the influence of an appropriate pair of glasses, gave him no trouble whatever; and now, even without glasses, the eyes have completely gained binocular vision and normal sight.

6 MOUNT AIRY AVENUE.

MEDICAL PROGRESS.

Angina Pectoris.—Dr. R. DOUGLAS POWELL, in *The Practitioner* for April, reaches the following conclusions in regard to this dangerous and painful affection:

Angina pectoris is an innervation of the heart or vessels, associated with more or less intense cardiac distress and pain, and a general prostration of the forces, always producing anxiety, and often amounting to a sense of impending death.

1. In its purer forms we observe disturbed innervation of the systemic or pulmonary vessels, causing their spasmodic contraction, and consequently a sudden extra demand upon the propelling power of the heart, violent palpitation, or more or less cramp and paralysis ensuing according to the reserve power and integrity of the organ—angina pectoris vasomotoria.

2. In other cases we have essentially the same mechanism, but with the extra demand made upon a diseased heart—angina pectoris gravior.

3. The trouble may commence at the heart through irritation or excitation of the cardiac nerves, or from sudden accession of anæmia of cardiac muscle from coronary disease—primary cardiac angina.

4. In certain conditions of blood or under certain reflex excitations of the inhibitory nerves, always, however, with a degenerate feeble heart in the background, we may observe intermittence in its action prolonged to syncope—syncopal angina.

Ligation of the Common Carotid Artery in Tonsillar Hæmorrhage; Recovery.—T. D. DUNN reports a case of a boy, three and a half years old, of a rather lymphatic temperament, with no history of hæmophilia in his family, who was attacked by abscess of the right tonsil which opened spontaneously, discharging a considerable amount of pus and blood. Twenty-four hours after the first discharge he vomited several large clots after having been asleep for some hours, and fainted from loss of blood. The hæmorrhage at this time was controlled by the application of Monsell's solution. Forty-eight hours later a similar hæmorrhage occurred, the bleeding being checked by powdered alum. Great exhaustion and fainting were present. Within the next three days several equally severe hæmorrhages occurred, and the child's condition became exceedingly critical and finally so serious that it was considered necessary to ligate the common carotid artery in order to prevent further hæmorrhage. Rapid recovery took place, the wound uniting without suppuration and the stitches were removed on the eighth day. The rapidity with which the child made blood was remarkable, as was also the absence of any cerebral symptoms.

Methyl-blue as an Anæsthetic.—PIETROWSKI has verified the statement of Ehrlich that methyl-blue is possessed of anæsthetic power to a remarkable extent. He has administered it both by way of hypodermic injections and by the mouth, to ten cases, including patients suffering from acute rheumatism and neuralgia of the intercostal, supra-orbital and sciatic nerves, as well as from lumbago. In all of these cases the urine became first green and then blue. After these injections there was some redness and tumefaction and perhaps some pain. In every case the pain was diminished.—*Revue Internationale de Bibliographie.*

Treatment of Acute Coryza.—In individuals who are subject to repeated attacks of coryza it will very frequently be found that the trouble depends upon a disorder of the general nutrition, which must be improved before a complete cure can be obtained. In addition to this it is absolutely necessary that a thorough examination of the nasal chambers shall be made in order that local applications may be applied. Generally inhalations of a mixture of carbolic acid or ammonia are useful, and the following may be employed:

℞.—Pure carbolic acid	. . .	80 grains.
Aqua ammonia	. . . .	1 drachm.
Water	. . . . .	4 drachms.
Alcohol	. . . . .	4 "

Several drops of this may be placed upon bibulous paper in the form of a cone and the vapor inhaled for a few seconds. Sometimes the disease may be aborted by the employment of atropine, and antipyrine may be used for the relief of the headache. As the disease progresses the following powder may be used as a snuff:

℞.—Subnitrate of bismuth	. .	1½ drachms.
Powdered benzoin	. . .	1½ "
Boracic acid	. . . .	1 drachm.
Menthol	. . . . .	3 grains.

Five or six times a day a pinch of this powder may be snuffed up into the nostrils, or in other instances a powder composed of small amounts of morphine and calomel is useful.

For the relief of the excoriation about the nostrils an ointment composed of equal parts of subnitrate of bismuth and vaseline may be employed.—*Journ. de Méd. de Paris.*

Ointment for Eczema.—

℞.—Thymol	. . . . .	30 grains.
Oxide of zinc, Starch	of each . .	6 drachms.
Lard	. . . . .	1½ ounces.

Apply twice a day to the affected part.—*Journ. de Méd. de Paris.*

Ichthyol in the Treatment of Dyspepsia.—STOCQUART is quoted by the *Revue Internationale de Bibliographie* as having recorded seven clinical observations regarding the use of ichthyol, for the purpose of relieving vertigo and other cerebral disturbances arising from simple dyspepsia or indigestion in the gastro-intestinal canal. He found that when ichthyol was administered with the bromide of potash, the latter drug was very well borne by the stomach, and that the appetite was improved simultaneously with the increase of digestive power.

The Treatment of Hiccough.—The *Gazette Hebdomadaire* gives the following treatment for hiccough. The local treatment is to compress the phrenic nerve and the pneumogastric in the neck by pressure with the index finger, which will often cause immediate cessation of the spasms. The medicinal treatment consists in the administration of a coffee-spoonful of vinegar mixed with a little powdered sugar, or the following formula may be used:

℞.—Subnitrate of bismuth	. .	45 grains.
Oxide of zinc, Valerianate of zinc, Powdered calumba	of each .	1 drachm.
Powdered opium	. . .	½ grain.
Essence of anise, a sufficient quantity.		

Mix thoroughly, and give half a teaspoonful of this powder in a wineglassful of sweetened water.

Current Literature.

SATURDAY, MAY 9, 1891.

PARTIAL EPILEPSY OF SUB-CORTICAL ORIGIN.

Duflocq, in a contribution to the study of cerebral localizations, reports an interesting case of partial epilepsy in which the cause of the paroxysms —an old and well-encapsulated blood-cyst—was without any point of contact with the cortical layer of the brain, but was completely separated from the gray substance by an absolutely healthy layer of white matter. The patient was a hatter, forty years of age, who gave a history of a fall from a step-ladder twenty years before, striking upon his head. There was no loss of consciousness and no subsequent pains in the head. He had had no syphilis, nor had he ever handled the acid nitrate of mercury. Three days before his admission into the hospital he was suddenly taken with a form of aura, consisting of a constriction which began at the epigastrium and in a few moments mounted to the throat, thence radiating toward the left side of the jaw. The patient heard a loud noise, which seemed to resound in the left half of the head and the left side of the chest at the level of the semi-lunar space. Severe pains in the head were felt, which persisted throughout the attack. The attack commenced at the moment the painful constriction reached the throat. The first phenomenon was a drawing of the tongue backward, so that respiration was impeded; then the head was turned slightly toward the left and inclined upon the left shoulder. The left corner of the mouth was drawn toward the ear; the mouth was slightly opened and held so. The eye did not participate in the convulsions. The movement extended to the shoulder, but the muscles of the arm and forearm remained relaxed. The head was strongly held by muscular contraction to the left shoulder during the paroxysm. The end of the crisis was marked by a pretty abundant salivation, which commenced a little previous to the end. The tongue was hard and could not be drawn out. The patient could emit only unintelligible and hoarse sounds, but memory and consciousness were well preserved. The pulse was regular and the respiration preserved its normal rhythm. After the attack there existed a facial paresis. There was no febrile elevation. Successive attacks were followed by loss of consciousness, increasing stupor, and death five days after admission. Trepanation was performed on the morning of the last day, with very marked amelioration of the symptoms. The patient spoke, drank, and watched a game of dominoes, but death occurred suddenly in the evening.

The autopsy revealed no deformity of the cranial walls. The brain and dura and pia mater were intact. The left hemisphere was normal. Examination of the surface of the right Rolandic region showed nothing abnormal. The fissures were clearly marked and the gray matter presented its usual coloration. An antero-posterior section, made just above the plane of the corpus callosum, revealed a brownish-red mass in the middle of the white substance corresponding to the lower extremity of the ascending frontal convolution. This mass was rounded in form and the size of a billiard-ball. It was surrounded by two concentric zones—the inner one clear yellow and of a slightly softened consistency; the outer one was of the consistency and ordinary appearance of the white substance. Finally, toward the surface of the convolution was a perfectly intact band of gray matter. A vertical and transverse section at the level of the foot of the ascending frontal (the frontal section of Pitres) showed the approaches to this rounded mass to be reddish in color. The mass was found to be composed almost entirely of the white substance of the lower frontal fasciculus (the foot of the ascending frontal), and the region of the island was intact. The external capsule was far distant from the diseased focus. There was no atheroma of the arteries of the base of the brain. The brownish mass was firm and was composed of a central portion of a mahogany-colored detritus, slightly foliated and manifestly consisting of blood. Around this was a shell, firm but thin.

It is quite exceptional to see a tumor situated in the white substance give rise to a partial epilepsy. Duflocq has searched medical literature and has succeeded in finding only three cases which are analogous to the one above reported—those of Osler (*American Journal of the Medical Sciences*, January, 1885), Taddeo de Hyeronomus (*Riform. Med.*, 1887), and Bouveret (*Lyon Méd.*, September 28, 1884). The clinical study of the patient above recorded reveals a certain number of functional troubles which appeared at the same moment as the epileptic crisis and which constituted it. These are the traction of the tongue backward, the retraction of the labial commissure, the opening and contraction of the mouth, the constriction of the pharynx, and the alteration of the voice. To each of these troubles a cortical centre corresponds, which numerous experiments and a few rare clinical observations have located in the lower third of the ascending frontal convolution. But it was in the white substance immediately adjacent to this limited region that the autopsy of this patient showed the existence of a hard, small, and perfectly circumscribed focus, of very old date, and one which could not have determined any lesion in the vicinity. All the centres involved indicated in a very positive manner that the seat of the lesion was the foot of the ascending frontal convolution; and if it is established that partial epilepsy may be of subcortical origin, the operator should feel authorized to search, in analogous cases, even in the white substance subjacent to the cortical centres for the original cause of the epileptiform accidents noticed in the patient.—*Revue Médicale*, Feb. 10, 1891.

PURULENT OPHTHALMIA OF THE NEWBORN.

Professor de Lapersonne (of Lille), in a report presented to the *Société Médicale du Nord*, gives the

following instructions upon the subject of purulent ophthalmia in the newborn:

"Purulent ophthalmia of the newborn is a very grave disease which every year renders blind a large number of children. Official statistics prove that one out of every three cases of blindness in children is due to this disease. This blindness might have been avoided by care, intelligently and promptly bestowed. The ophthalmia commences ordinarily on the day after birth; but it may begin toward the eighth or tenth day. It manifests itself by a swelling and redness of the lids, which prevents the eye from opening. There flows from the eyes a fluid at first clear lemon-yellow, then thick and creamy, then greenish. If the affection is not energetically treated, the eye, becoming involved by the fourteenth or fifteenth day, will be perforated, its humors escaping. Complete and incurable blindness will be the consequence of this accident.

"The secretion which flows from the eyes is virulent and contagious; it transmits the disease to the other eye, if only one eye has been at first affected; it produces ophthalmia in other children, if the necessary precautions are not exercised; transported by insufficiently washed hands, it may become the cause of that terrible accident, peritonitis, in the newly-delivered. To escape these grave dangers it becomes necessary to take the following precautions:

"1. Antiseptic vaginal injections should be made before delivering the woman, whenever the abundant leucorrhœal discharge gives rise to fears of contagion for the child.

"2. In *all* children, immediately after birth, *before the bath*, the lids should be washed with an antiseptic solution, by means of a fine linen cloth, which is very suitable, or better still, by means of a small tampon of antiseptic wadding. For this purpose either a solution of phenic acid, 1 to 100, or equal parts of boiling water and Van Swieten's fluid, or a solution with the following formula will suffice:

No. 1.

℞.—Sublimate	. . .	1½ grains.
Tartaric acid	. . .	3 grains.
Distilled water	. . .	3 oz. 2 drachms.

"Immediately after this the lids should be opened and a drop of the following collyrium should be allowed to fall into each eye from a dropper, a glass rod, or simply a roll of paper:

No. 2 (in colored bottle).

℞.—Silver nitrate	. . . .	2 grains.
Distilled water	. . .	2½ drachms.

"These formulæ may be handed to the midwives; all that will be necessary will be to give the direction 'For the eyes.' These bottles should always be carried by midwives in addition to other articles indispensable for accouchement.

"3. If, in spite of these precautions, the first signs of swelling and secretion present themselves, the physician should be immediately summoned, and he alone should make the necessary cauterizations.

"4. Whenever it becomes necessary to treat a purulent ophthalmia, all the articles which are to serve for the dressings should be carefully placed on one side. After each washing of the eye the linen cloths or the wadding which have been used should be burned. The hands should be properly washed with soap and soaked in a solution ready prepared for this purpose, consisting of phenic acid, 1 to 40, or the undiluted Van Swieten's fluid."

According to Professor de Lapersonne, it is because of these rigorous precautions that the midwives now escape these accidents, unfortunately too frequent.—*La Médecine Moderne*, March 5, 1891.

PUTREFIED MILK IN THE BREAST.

Jorissenne reports a rare and curious case which occurred in his practice during the year 1874, and which, for want of an explanation or any comparison with a case more or less analogous, he had refrained from publishing hitherto. The facts of the case are as follows:

Mrs. P. V. was delivered with the aid of forceps on the 5th of October, 1874. The sequelæ were normal and she had regularly nursed her child. Of a rather delicate constitution, small, pale, with flushed cheeks, of a lymphatic temperament, possibly not without tuberculous taint (although still living and with less pathological appearances than formerly), she was a good specimen of a blonde. Her child was well developed, but in 1875 it suffered with the milk-crust. On the 7th of December she took a short trip and remained away about seven hours and a half. On her return she hastened to give it its nourishment, and it suckled eagerly. A fœtid odor, however, disseminated itself with the milk. The husband and the other members of the family left the room, compelled to hold the nose. It was, they said, intolerable; a sulphurous and extremely offensive odor, resembling putrid eggs, with a mixture of sour acidity. The mother herself became ill from breathing these disgusting emanations, and the child vomited some time later. Jorissenne did not see the patient until the next day, at which time none of the sheets soiled by the vomited food retained the foul odor. The patient did not at that time seem to be suffering any ill effects from the trouble of the previous day. The breasts did not present any fissure nor any trace of engorgement; the milk was no longer odorous. On questioning, it was learned that the milk had remained three times as long as ordinarily in the glands, without occasioning any difficulty, even moderate in amount. The two breasts, nevertheless, had contained vitiated milk. The woman also confessed that several times her milk had begun to become offensive, but to a less degree, when the interval between the nursings had been too considerable. It is necessary to add that her trip had been rapid and fatiguing. An hour of carriage-riding and five hours and a half of rapid walking had been broken by only an hour's rest at the table. This, however, will not explain the peculiar odor of this putrefaction. Whence came the germ of decomposition? At the time none of the milk was

preserved to ascertain if, upon becoming putrid, it would give rise to phenomena analogous to those of the first occasion.

The conduct of the child is no less of interest than were the heteroclite alterations in the mother. It sucked the infected milk with the same avidity it evinced when swallowing the nutriment in its normal condition. There was no evidence of repugnance on its part, no hesitation, no unusual interruptions. Neither the taste nor the odor caused it to reject the food. The odor of the milk was beyond doubt, since all who were in the room were compelled to beat a hasty retreat. The child, however, was unaffected. It is fair to conclude that the sense of smell in an infant is but slightly, if at all, developed. It can hardly be believed that milk possessed of such an odor should be sweet and agreeable to the taste. It is probable that the savor was associated with some alteration in the taste, the sour acidity which was noticed probably indicating such a change. Various experiments have shown that the sense of taste perfects or develops itself with age. It is, therefore, probable that the ability to discriminate between the taste of pure and tainted milk was but poorly developed in this child, probably to no further extent than was the sense of smell. The perception of exceptional odors in the alimentation of early age is certainly obscure, indistinct, or even *nil.* The iodide of sodium or of potassium has been frequently administered to the newborn without concealing the bitter, salty taste, by the use of some agreeable syrup, and without any show of repugnance on the part of the child. Frequently will one see a child of five or six months suck toys which are covered with paints disagreeable to the taste. This is proof incontestable that there is not that acuteness of the sense of taste in these children that there is in older individuals. It is well known that olfactory sensations exert an influence upon the gustatory sensations. The absence in the power of smelling in this instance may have had a favorable influence upon the sense of taste.—*Archiv de Tocol. et de Gynécol.*, February, 1891.

CASE OF A FORM OF NYSTAGMUS HITHERTO UNDESCRIBED.

DR. C. S. FREUND reports a case of nystagmus occurring in a locksmith, nineteen years old. It developed shortly after Whitsuntide, 1889, following a severe day's field-duty in the army. The man awoke in the morning with flickering before both eyes, considerable weakness of vision, with pain "behind" both eyes, and with great oscillation of both eyeballs. This oscillation is said by the patient not to have changed in character since its first occurrence. It consisted of a permanent, extremely rapid, to-and-fro vibration of the eye-ball; it was constantly attended by a feeling of flickering of objects before the eyes; and surrounding objects, corresponding to the oscillation, appeared to move with extreme rapidity; they seemed to whiz to and fro. The patient discovered at the beginning of the disease that the oscillation diminished in intensity if he fixed an object sharply, and that, moreover, it ceased entirely if he closed one eye, no matter which; it was reproduced immediately if he opened both eyes. Not only the nystagmus ceased upon monocular vision, but also the seeming movements of surrounding objects and the pain behind the eyes. The patient was admitted to the hospital June 27, 1889. The pain behind the eyes lasted about fourteen days after that, and then gradually grew less within six weeks under daily use of mustard paste to the nape of the neck. No change occurred in the other symptoms, though the nystagmus varied in intensity from time to time.

As to vision, the patient from childhood had seen better from the left than the right eye. Three months from the occurrence of the other symptoms, especially since the middle of March, 1889, he had noticed that vision of the right eye was gradually getting worse. The weakness of vision seemed to the patient to be independent of the flickering, as it persisted upon monocular vision. It seems to have persisted without getting better or worse since June 12, 1889. There was never double vision.

At the request of Professor Magnus, Freund examined the nystagmus from a neurological point of view. Both eyeballs were found to move in a horizontal direction, to and fro; they vibrated frequently, and in such small arcs that the rate of vibration could not be counted; it appeared like trembling of the eyes. There was no hippus. Both eyes "trembled" equally. There was intermittent clonic blepharospasm. The vision was: Right eye, hypermetropia 2.5 D.; S. $\frac{20}{CC}$. Left, hypermetropia 3 D.; S. $\frac{20.}{XX}$

Freund reviews the forms of nervous disease in which nystagmus has been found, and concludes that the present case does not belong to any of them.

The galvanic current effected the most striking improvement. The anode was placed on the brow in the eye region, the cathode behind upon the neck, and a current of four milliampères was allowed to pass for five minutes. Improvement was perceptible at once. Gradually the strength of the current was increased to six milliampères, and the time lengthened to eight minutes. After seven days' treatment not the slightest indication of the former nystagmus could be discovered. The result remained permanent, with the exception of an insignificant relapse. The subjective disturbances—flickering before the eyes and seeming movements of objects—ceased simultaneously. The trembling of the upper eyelid persisted longest, but disappeared after three weeks of electrical treatment.

There were general clinical symptoms of diagnostic importance. The pulse was arhythmic, dropped a beat, and was accelerated to 100–110 per minute. The first sound over the mitral area was impure. The thyroid gland was enlarged. It was learned that the patient had had a peculiar, profuse, watery diarrhœa, without colic, and that he suffered with increased perspiration, which appeared especially upon the brow and shoulder-blades. This had been noted since 1888.

Freund, therefore, comes to the conclusion that

the nystagmus in the present case was a symptom of Graves's disease. The difficulty in reaching this diagnosis was increased by the fact that Magnus found in the right eye a striking central defect for red, while the left eye had normal color vision, and by the fact that nystagmus, as a symptom of Graves's disease, had been rarely observed before. Bramwell reports a case of nystagmus in which symptoms of Graves's disease occurred. Bramwell suspected disease of the cervical sympathetic.

Nystagmus resembles most the trembling of the limbs, the so called Marie's symptom, which occurs in Graves's disease. As regards the localization of the disease, Freund follows Uhthoff. Clinical experiences and *post-mortem* findings of Nothnagel, Friedreich, Roehlmann, Prévost, and others, show that the region of the brain the lesion of which may cause nystagmus is extensive. The most likely regions are the mid-brain, the corpora quadrigemina, and the medulla oblongata. It is significant that in these regions are found the nuclei of the cranial nerves, and that in Freund's case three or four cerebral nerves were involved.—*Deutsche med. Wochenschrift*, February 19, 1891.

SOCIETY PROCEEDINGS.

[*By Telegraph.*]

THE AMERICAN MEDICAL ASSOCIATION.

Forty-second Annual Meeting, held at Washington, D. C., May 5, 6, 7, 8, 1891.

THE opening session of the American Medical Association was held in Albaugh's Opera House, on Tuesday morning, May 5th, at 10 o'clock. The Hon. John W. Ross, one of the Commissioners of the District of Columbia, extended to the delegates a hearty welcome to the city.

The Annual Address to the Association was delivered by the President, DR. WM. T. BRIGGS, of Nashville, Tenn.

THE PRESIDENT, after speaking of the high mission of the physician as a scientist and philanthropist, referred to the scientific and practical progress of the day. The science of medicine, he said, had been almost completely revolutionized in our day. In every part of the habitable world blessed with civilization, members of the medical profession were enthusiastically engaged in the work of mitigating disease and prolonging life. Through the brilliant genius of one known as the Father of the Association, this Association had been formed and had grown to its present proportions. He referred to the venerable members of the body, associates of its founder, who, from the first had made annual pilgrimages to this Mecca. Chief among these he mentioned Dr. Nathan Smith Davis—a reference which elicited applause.

Dr. Briggs, continuing, reviewed in general terms the work of the Association, and the great benefits it had conferred on the medical profession. Referring to the code adopted and recognized by the Association, Dr. Briggs said that it would seem that every honorable member of the profession would be willing to abide by this code, but there were some men, men of a high order of talent, and who are justly distinguished, who have a repugnance to a part of the code and hold themselves aloof from the Association. They undoubtedly had as much pride in the profession as did members of the Association. Could they, however, say that their action was not inspired by some selfish motive?

He referred to the gradual elevation of the standard of education through the influence of the Association. He was ready to maintain that the advantages and facilities for medical and surgical instruction in our institutions were fully equal to those in any other country. These institutions had graduated men who were the peers of any the world had produced. In all the practical branches of medicine, he held, America was in advance. He believed that a majority of the American medical colleges were ready to accede to the demand of the Association for higher education. The success of the Association in these and other directions had been very great. The Association now, he said, occupied an advanced position in the great deliberative bodies of the world. It was full time, he said, that it should take the position of legislating for the whole profession in America. Speaking of those who had alienated themselves from the Association, he said that they should put aside petty differences and show how good it was to dwell together in perfect unity. It was proper, he thought, to pass a resolution, now that so many medical colleges had adopted the advanced course recommended, that no medical man not a graduate from a college that had adopted the approved course, and no professor attached to a college that had not adopted such a course, be admitted as a member or delegate of the Association.

Dr. Briggs suggested various changes in the routine programme of the Association, and urged that the prize essays contemplated in the formation of the Association would tend to excite interest and encourage study. He believed that medical science would be advanced by the establishment of schools of original research. He thought it might be well to add to the Association a section of original research to encourage members to make or repeat original research. He urged that every effort be made to advance the *Journal* of the Association to the highest point. Next to providing for an ample income, he said, it was important to select an able editor with ample powers. The salary of such an editor, he said, should be $10,000 or $15,000, enough to make him pecuniarily independent. In closing, Dr. Briggs expressed the hope that the deliberations of this meeting would carry the profession still further onward in the great road of progress.

DR. CULBERTSON, of Ohio, offered a vote of thanks for the able address, and moved that a committee be appointed by the presiding officer to develop the suggestions made by him. Drs. Hooper, Culbertson, Moyer, Marcy, and Conner were appointed such a committee.

The Trustees of the *Journal* made a preliminary report upon the question of the establishment of a permanent home for the *Journal*. The question having arisen of changing the place of publication to the National Capital, it was resolved to submit the matter to the members of the Association through the columns of the *Journal*. The result of this has been the undoubted choice of Chicago as the place of publication. The con-

troversy has strengthened the *Journal* by increasing its subscriptions and arousing the interest of other subscribers hitherto lukewarm.

DR. ALBERT L. GIHON, Medical Director of the U. S. Navy, presented the following amendment to the Constitution: "That the first day of the general session of this Association shall be the first Wednesday of May or June, the Tuesday preceding being devoted to the registration of members and delegates, the meeting of the standing committees, and the organization of the several Sections." The object of this amendment is to facilitate the work of the Association, to enable all the members to be present on the opening day of the session, that they may be prepared to take part in the business of the meetings, and to give an opportunity to the other National organizations, the organization of the Medical Examining Boards, of the Railroad Surgeons, the American Medical Temperance Association, founded on a line similar to the British Medical Temperance Association, the Association of Medical Editors, the Association of Superintendents of Insane Asylums, etc., to unite with the Association in its labors.

The motion was laid upon the table until the next day.

The Treasurer reported the balance in the treasury, $9427.21. The statement of accounts will be published in the *Transactions* of the Association.

DR. COMEGYS, of Ohio, offered the following resolution: "That a committee be appointed to consider the question of petitioning Congress to create a Cabinet officer to be known as the Secretary of Public Health, the committee to report on Thursday morning." The motion was carried, and Drs. Comegys, N. S. Davis, and Richardson, of Louisiana, were appointed as the committee.

DR. C. A. L. REED, of Ohio, offered the following:

"*Resolved*, That the American Medical Association hereby extends a cordial invitation to the medical profession of the Western Hemisphere to assemble in the United States in a Continental American Medical Congress.

"*Resolved*, That the Committee on Nominations be expressly instructed to nominate one member for each State and Territory, and one each from the Army, Navy, and Marine-Hospital Service, who shall constitute a committee which is hereby instructed to effect a permanent organization of the proposed Continental American Medical Congress, and determine the time and place at which the same shall be held.

"*Resolved*, That the Committee on Nominations be and is hereby further instructed to report the nominations pursuant to the foregoing resolutions at the general session on Thursday morning."

Carried. Adjourned.

SECTION OF OBSTETRICS AND DISEASES OF WOMEN.

DR. CHARLES A. L. REED, of Cincinnati, delivered the annual address. He limited himself to a few words upon the progress which the department of obstetrics and gynecology had made during the recent past, noting especially the *evidences* of this progress. As one of these, he regarded the admission of women to the session of the American Medical Association, and another was the growing tendency to specialism. He would suggest that early steps be taken to procure a division of the section into its two distinct portions, gynecology and obstetrics. The two are not necessarily interdependent, and facts go to show that they are growing more and more apart. He felt that such a division would be conducive of benefit to each section.

The subject of abortion and premature delivery was treated of first by DR. H. D. FRY, of Washington, who spoke on the "Prevention of Puerperal Convulsions by the Induction of Premature Delivery." Albumin in the urine disappears under treatment, as a rule, or remains small in amount, except in a few instances. These exceptions formed the subject of Dr. Fry's paper. The amount of albumin in the urine does not alone indicate the gravity of the case. Severe toxic symptoms may manifest themselves with only a trace of albumin present. Examination of the urine should be made every few weeks. In doing this, the specimen tested should be taken from the whole amount passed in twenty-four hours. The specific gravity should also be taken. When serious symptoms are present, and the treatment is not successful, the induction of labor must be thought of, especially if the child be viable. If the symptoms, however, are very serious, the child must not be taken into consideration. Out of over 800 premature infants, with an average weight of four and a half pounds, 600 and over lived. Viability exists at the sixth month. Dr. Fry reported a case of a primipara of thirty years. While nursing an invalid sister she had taken cold, and when he saw her she was suffering from headache, insomnia, and nausea. She was seven months pregnant. On the second day 21 per cent. of albumin was found in the urine, and hyaline casts were present in large quantity. Hot baths were given the patient, and she was kept in a warm temperature. Her bowels were kept open and diaphoresis was produced. The specific gravity varied from 1026 to 1010, and the albumin from 18 to 31 per cent. by volume. As her condition did not improve, and the urine continued small in amount, induction of labor was suggested. The patient was placed in Sims's position. After cleansing the vagina and cervix with carbolized solution, labor was induced by means of a bougie. The internal os gradually dilated; forceps were applied to hasten the dilatation under the influence of chloroform. The right blade was inserted first, intermittent traction was made until the os dilated, and the child was then delivered. A laceration of the cervix was sustained, which was at once repaired. The child weighed five and a half pounds, and was asphyxiated at first, but recovered under proper treatment. The quantity of urine now increased in amount, and the albumin disappeared. The infant was raised in an incubator until sufficiently strong to be treated in the usual manner. Dr. Fry induced labor at the thirty-fourth week in another case with evidences of toxæmia and with albumin in the urine. The child was healthy; convalescence was rapid. In this case organic disease of the kidney was compatible with health except during gestation. In four other cases reported by him the result justified operative interference. In all, eclampsia was threatened. The insertion of a bougie between the membranes and the intra-uterine wall is the safest way of inducing labor. The bougie should be soaked twenty-four hours in bichloride 1 to 1000, and then washed in warm water before using. The end of the

bougie should be bent at an obtuse angle and then inserted. If this fails, the instrument can be removed and a fresh one inserted. Another method of inducing labor is by the application of alternate hot and cold fomentations to the abdomen.

DR. BEDFORD BROWN, of Alexandria, Virginia, read a paper on "The Practical Treatment of Accidental Abortion," as deduced from 200 or more cases occurring during his practice of forty years. He first gives a hypodermic of one-quarter of a grain of morphine and one-sixtieth of a grain of atropine, and if there is much depression, one-sixtieth of a grain of strychnine and twenty minims of ergot to produce contraction of the arterial system and stimulate the heart. Antiseptic vaginal douches are given, and then one pint of hot water containing alum, to reduce the hæmorrhage. If these measures fail to arrest the progress of the abortion, the patient is placed in the lithotomy position across the bed, a speculum is inserted and iodoform gauze pressed around the cervix, and over this absorbent cotton. A catheter is placed in the cervix. This usually results in the expulsion of the fœtus. Should it fail, a conical tampon, covered with cosmoline, is inserted into the os, and allowed to remain there. An enema is also given to induce contractions. Dr. Brown has little or no faith in the use of ergot to arrest the hæmorrhage or to expel the placenta. A tampon is necessary for the bleeding. In delivering the placenta he relies on his finger alone. The patient being in the lithotomy position, an assistant forces the uterus down, while the finger is inserted and removes the placenta. If all cannot be removed the patient is chloroformed and the whole hand inserted. Safety, speediness, and completeness are the essential factors in the treatment of these cases. The use of the tampon in retained placenta is neither wise, safe, nor scientific. In collapse following hæmorrhage one-eighth of a grain of morphine, one-hundredth of a grain of strychnine and atropine each, and hypodermics of hot water, 110° F., containing small amounts of chloride and bicarbonate of sodium, are given.

Dr. Stanton, of Cincinnati, thought that the cases where induction of labor is necessary are very rare. The condition of the patient and the time of convulsion will indicate the need of action. If labor has already commenced it is wise to hasten the process, if not it is better to wait as long as possible. The fact that albumin is present in the urine is not sufficient reason to justify the induction of labor. Other measures will usually suffice.

Dr. Potter, of Buffalo, emphasized the importance of the early induction of labor in *threatened* eclampsia. It is not always necessary to wait until there is absolute convulsion. If a uræmic condition is present induction is necessary.

Dr. King, of Washington, urged that induction of labor should not be performed until everything else had failed. He suggested the value of postural treatment, changing the woman from the genupectoral to Sims's position and back again. Good results have followed this method.

DR. W. W. POTTER, of Buffalo, read a paper on "Joint Reflexes Consecutive to Pelvic Inflammation." He called attention to the multifarious reflexes following pelvic disease, and mentioned specially those which occur about the larger joints of the leg. He said that an intimate relationship existed between the pelvic organs and the hip-joint, a relationship which is conveyed from the spinal cord through the sacro-sciatic foramen into the joint itself. He illustrated his paper by the case of a woman, twenty-two years of age, who, when six months pregnant, was attacked by what was diagnosed as general peritonitis, from which she recovered. She was delivered at full term with forceps and made a rapid recovery. Some weeks after she suffered with pain in the right hip-joint, which was so severe that she called in a physican. Hip-joint disease was diagnosed and the leg put in a splint and kept there for several months. There was no immobility of the joint nor any shortening of the limb. As a result of this mistaken diagnosis the case was taken to law. The points suggested were the necessity for examining into the condition of the pelvic organs in cases of joint symptoms, and the importance of an early diagnosis, since the treatment depends upon the accuracy of the diagnosis.

DR. LLEWELLYN ELIOT, of Washington, read a paper on "Spasmodic Stricture of the Urethra Following Labor." He regards this as one of the rare accidents complicating labor. It may be extremely painful or painless. It may be entirely spasmodic or symptomatic. The former may be found in connection with injuries of the vagina and rectum and in hysteria. Symptomatic stricture is more frequent, and may occur in any portion of the urethra. In the treatment of this condition iron is needed for anæmia, the bromides for the nervous condition, the iodide of potassium and colchicum for the rheumatic cases. Locally, astringents and caustics are needed, as solution of silver nitrate. If these fail, cystotomy must be performed.

DR. I. S. STONE, of Washington, read a paper on the query, "Can the Gynecologist Aid the Alienist in Institutions for the Insane?" He is strongly of the opinion that the question should be answered in the affirmative. The paper was mainly a compilation of cases which had been reported in the various journals of cures of insanity following operations upon the internal genital organs. Stone believes that many women are now living, confined in asylums, who could be cured by proper surgical procedures. He urged the importance of increasing the staff of medical attendants in the institutions for the insane.

Dr. Eastman, of Indianapolis, reported a case of a woman who suffered from violent neuralgic attacks in the head and who eventually went insane, but who was cured by the removal of a diseased Fallopian tube, followed by a year's careful treatment. The woman is now the head of a public school and in excellent health, both physical and mental.

Dr. Walker, of Indiana, regards many of these cases as true neuroses in which rest alone, without operative treatment, will result in a cure.

Dr. Reed, of Cincinnati, enlarged upon the necessity of increasing the staff of physicians in connection with insane asylums, and suggested the appointment of specialists to visit these institutions and investigate the condition of the pelvic viscera.

Reports of laparotomies were made by Dr. J. H. Branham, of Baltimore, and Dr. J. H. McIntyre, of St. Louis.

SECTION OF DISEASES OF CHILDREN.

The Section of Diseases of Children met for the first time on Tuesday, May 5th, at 3 P.M., the President, DR. W. PERRY WATSON, of Jersey City, in the chair. The afternoon was devoted to a discussion upon the composition and clinical value of Sterilized Milk.

DR. HENRY KOPLIK, of New York, treated of the bacteriological aspect of the question, and exhibited specimens of cultures made from different preparations of sterilized milk. After reviewing the literature upon the subject, the processes described and practised by Pasteur and Hueppe were narrated. It had been repeatedly shown by different observers that the lactic acid bacterium gains access to milk from without, that it is destroyed by heat, but that a high degree of heat is needed to kill the spores of the bacteria, which multiply after several days and produce a second or alkaline fermentation. Pasteur's method of sterilizing consists in heating milk to 75° Celsius in bulk for half an hour; it is then cooled by passing over ice. Such milk keeps for twenty-four hours, but the process is impracticable. Soxhlet's method, most in use, requires the milk to be boiled in a water bath. The best of all methods is that of Hueppe, by which steam is the active agent. In an ordinary covered tin vessel, twenty minutes is sufficient to sterilize milk by steam; forty-five minutes is ample time for permanent sterilization. Milk will decompose, however, several days after being well steamed, by the action of rod bacilli isolated by Löffler and Koplik. In this process small flocculent clots are formed with characteristic odor, leucin and tyrosin resulting. Milk may be colored by litmus and then subjected to bacterial change when discoloration is observed. The pus coccus turns milk acid, and seems to peptonize it; other poisonous bacilli grow well in milk. After exhibiting and describing cultures of the forms of bacilli which may develop in milk after sterilization, Dr. Koplik formulated the following practical conclusions: That prolonged sterilization by steam is necessary, and that sterilized milk should not be kept for several days, but should be used promptly. The particular form of apparatus or cork is not important. Absorbent cotton is a bad cork, as it mats and leaks; cotton-wool which has been baked is better. He obtained the best results by using digestive ferments (pancreatin, etc.) after sterilizing, not before. He does not feed by weight or age, but in quantities proportionate to the size and vigor of the child. Efforts at securing good milk will be most successful when milk is sterilized at dairies.

Next in order, a summary of a paper by PROF. ALBERT R. LEEDS, of Hoboken, and DR. EDWARD P. DAVIS, of Philadelphia, entitled "The Chemistry and Clinical Value of Sterilized Milk," was read by Dr. Davis.

From a chemical examination of different samples of sterilized milk, Prof. Leeds concludes that sterilization destroys a starch-liquefying ferment normally present in milk. Lactalbumin is partly coagulated, and casein is made less readily digestible by rennet, pepsin, and pancreatin. Butter fat sometimes forms, and the albuminoids in their changed condition hinder the assimilation of fat. Milk sugar is destroyed by long heating.

The process most likely to give good results is to render milk feebly alkaline with lime-water, then treat with pancreatin at 155° F. for six minutes; if not used at once, raise the milk to boiling for a moment. Dr. Davis's experience in the Philadelphia Hospital and Polyclinic had indicated that while infants fed on sterilized milk and treated by modern methods of intestinal antisepsis were relieved of acute gastro-enteritis or "cholera infantum," yet they were not nourished by sterilized milk; they frequently suffered from obstinate constipation, and their bodies presented after death appearances characteristic of atrophy of the digestive tract. Sterilized milk *as nourishment* was not successful in his hands.

Dr. J. Lewis Smith, of New York, discussed the papers, emphasizing the many sources of contamination to which milk is open. He narrated Klein's experiment, in which cows inoculated on the shoulder with bacteria, excreted germs in their milk. Milk strained through wine-strainers, exposed to the air of infected rooms, and handled by infected hands, is dangerous. Before the use of sterilized milk among asylum children in New York, 100 per cent. under eight months perished; one child lived two months. A considerable improvement followed the introduction of sterilized milk. He favored sterilization prolonged for two hours.

The subject was viewed from quite a different standpoint by Dr. E. N. Brush, of Mt. Vernon, who has given much attention to securing proper production of milk. He considered the lactic fermentation normal, and advised "souring" the milk and breaking up the curd. The process secondary to lactic fermentation in which ptomaines are formed is the injurious one. He practises spaying cows to be used for milk; they are kept clean, carefully groomed, and the udders cleansed before milking. Milk is received in a small basin, which overflows into a linen cloth which strains it. Dr. Brush objected to any process which devitalized milk, arguing that young animals need vitalized food. He instanced calves, which have, while fed on mother's milk, large, soft livers, suited for human food; when fed on artificial food, the liver becomes small and hard. Especial importance is laid upon removing sexual excitement and functions from cows giving milk, and numerous examples of abortion and the bad effects of rut were given. Cows excrete through the teats, and milk is unfit for use after the cow has fed on poisonous substances. Cholera infantum increases as grass fails and cows eat noxious herbs. Good milk costs twelve cents to produce. Poor milk, costing five cents, is frequently peptonized at a cost of twenty-five cents per pint!

Dr. Adams, of Washington, had obtained very happy results from the use of sterilized milk with barley or oatmeal added. Examples of parental prejudice against sterilized milk were given. In transportation, the use of ice was deprecated.

The frequency of fermentation in children's stomachs was explained by Dr. Simon Baruch, of New York, by the absence of hydrochloric acid, which is a valuable antiseptic. He sterilized forty-five minutes, at 212° F. He had been interested in a recent visit to Escherich's establishment in Germany, where sterilizing in quantity is done.

Interesting corroborative remarks were made by Dr. Latimer, of Baltimore, and Dr. Bright, of Toronto.

In the treatment of cholera infantum, Dr. Smith found especial value in withholding milk, sometimes for a week,

and feeding white-of-egg and water, with barley flour which has been subjected to prolonged boiling.

SECTION OF MEDICAL JURISPRUDENCE AND NEUROLOGY.

The subject of the address by the chairman of the Section, DR. T. D. CROTHERS, of Hartford, Conn., was "The Early Psychical Symptoms of Traumatic Brain Injuries." The speaker spoke of the great field open to the investigation of the neurologist, and how, instead of being a specialty in itself, it had reached that point where it must be divided into many special studies. He thinks that much can be expected from the investigations now going on in the almost unknown field of brain physiology. The speaker then spoke of the confusion existing between law and medicine as regard many nervous diseases. Many of the ideas, according to the speaker, embodied in our laws are based upon superstition and error. He considers that medical jurisprudence must depend upon scientific understanding. He then spoke of the difficulty of an early diagnosis in many of the diseases of the nervous system. As an instance, he spoke of the uncertainty of a diagnosis in general paralysis of the insane, even after many of the symptoms were quite marked. The friends and family of a patient suffering with this disease first notice that there is an alteration in his character, but pay no special attention to it until there is a sudden development of some marked peculiarity or reckless conduct, when the family physician is called in, who in many cases explains the change of character on some moral basis. Many serious blunders in diagnosis are made during this period. If the condition is diagnosed early, great subsequent trouble may be avoided.

The speaker then spoke of the alcohol, opium, and other habits. He said that they were usually considered as due to the habit into which the patient had fallen. He divided these conditions into two classes; first, those with a history of traumatism, such as sunstroke, blows on the head, etc. These cases, after recovery, often take to the use of alcohol, or opium, and go downward into the worst inebriety, and later insanity, while others are carried off before they become insane by some intercurrent disease, like pneumonia. The second class of cases he refers to "psychical traumatism." The patient is suddenly overwhelmed by great grief, business reverses, etc., after which his entire character is changed, and the drink habit is developed. Alcohol is first taken as a medicine, followed later by confirmed alcoholism. In these cases the patient is treated as a common drunkard, is despised by his associates, and is an outcast in society.

The drink habit is in many cases the symptom of grave cerebral trouble, and should receive prompt attention. Often the drunkard is confined in jail, and during his confinement acute mania or melancholia develops. In many of these cases the alcoholic habit is the symptom of the approaching disease.

The neurologist must point out the road for the family physician, who must be able to study his cases closely, as it is during this stage of the disease while the patient is under the care of the family physician that benefit from treatment can be expected. The heredity of the patient, his early life and surroundings, must be closely studied. Dr. Crothers believes the time will come when the inebriate will be protected and cared for as thoroughly as the subject of insanity.

The subject of the next paper on the programme was "Status Epilepticus," by GROSVENOR R. TROWBRIDGE and CHARLES B. MAYBERRY, of Danville, Pa. The writers of this paper gave a very interesting description of this disease. They described twenty cases which had come under their observation, from which they draw the following conclusions: First, there is no demonstrable cause for this disease; second, the convulsion is always followed by coma; third, there is no post-mortem lesion that is characteristic of this disease; fourth, the unfavorable prognosis of these cases, and lastly, it must be treated symptomatically. The treatment must meet two indications, first, the attack itself; second, the exhaustion following the attack during the stupor.

The use of chloroform and ether to control the attack is temporary; they only stop the convulsion while the patient is completely under their influence. Ether is the preferable drug, as it does not depress the heart or respiration.

They have administered chloral by enema in thirty-grain doses, often repeated in some cases, without effect. They think it might be used with advantage hypodermically, but have never administered it in that way. Bromide of potassium is useless in these cases on account of its slow action. Nitrite of amyl is also of little value to control the convulsions. Hypodermic injections of morphine have succeeded in some cases, while in several others it has been found valueless. Atropine is useful in so far as it stimulates the heart and respiration. The use of hyoscine promises good results, as it has acted well in a number of their cases. It does not end the attack, but induces sleep, during which the patient is free from the convulsion. Salicylate of physostigmine has been tried, but has been found valueless.

Coniin has given the best results of any drug that they have employed. The effects of one-hundredth of a grain are as follows: Decrease of the convulsion, commencing first in the lower extremities and gradually extending upward, followed by ptosis and slowing of the heart and respiration, and later sleep, which lasts several hours. As soon as the patient awakens the convulsion returns. It usually acts best in combination with morphine. In four of these cases this treatment was of no benefit, but in several other cases it was used very successfully.

It is usually useless to attempt medication by the mouth. If drugs or food are given, they should be introduced through a stomach-tube. Whiskey, atropine, milk, nourishing broths, etc., should be given to stimulate and sustain the strength of the patient.

In discussion, Dr. Hughes, of St. Louis, spoke of the use of chloral during the attack, and disagreed with Dr. Trowbridge in regard to its value. He says the reason why it does not succeed in many cases is because it is used too timidly. A profound impression must be made upon the vasomotor system. His rule is to give eighty grains of chloral hydrate by the rectum at one dose, and in the majority of cases this treatment is successful.

Dr. I. N. Quinby, of Jersey City, N. J., administers large doses of calomel and swift purgatives, with the view

of removing the serous effusion in the brain, after which anodynes are given.

The next paper was by DR. IRVING C. ROSS, of Washington, D. C., entitled "The Neuroses from a Demographic Point of View." The observations of Dr. Ross in many countries showed that certain races were peculiarly subject to certain neuroses, while other races were almost free from a given nervous affection.

In discussion, Dr. Osler, of Baltimore, spoke of the freedom of the negro race from chorea and locomotor ataxia. He has found that hysteria is not an infrequent disease among this race.

Dr. Ross, in reply, said that the observation of Dr. Osler as regards locomotor ataxia had not been borne out in his experience, as he had seen two typical cases of locomotor ataxia occurring in negroes within the last year.

Dr. Hughes, of St. Louis, spoke of the increase in insanity in the negro race since the war.

This discussion was followed by a paper on "The Functional Degeneracy of the Brain," by DR. J. T. SEARCY, of Tuscaloosa, Ala. He claims that the brain-power of an individual depends upon heredity and the constant exercise of the cerebral function. Idleness of the brain is followed by degeneration, just as muscular degeneration follows inactivity of the muscles. The two extremes in the social scale, the wealthy man and the very poor, are most subject to degeneration of the brain, while the middle classes furnish examples of the highest cerebral development. Next to idleness he places alcoholism as the most potent agent in the causation of cerebral degeneration. Long use of alcohol begets such impairment of the brain function that complete recovery rarely ever follows. The brain of the inebriate is usually weak to start with, and quickly degenerates after the use of alcohol is commenced.

The next paper was entitled, "A Description of the Newly-discovered Virile (Penile) Reflex," by DR. C. H. HUGHES, of St. Louis. The discovery of this new reflex has been made by Dr. Hughes within the last year. The description of this reflex is as follows: A healthy individual whose genito-spinal centre is entirely normal is placed in the supine position, and the sheath of the penis made tense by clasping the foreskin with the left index finger and thumb and pulling it firmly toward the umbilicus, placing the finger low down upon the dorsum of the penis for perceptive purposes. On then sharply percussing the dorsum of the penis, near the perineal extremity, a retraction of the bulbo-cavernous portion will be felt. The full value of this reflex is yet to be determined.

DR. JOHN MORRIS, of Baltimore, Md., gave an extract from his paper entitled, "What Can be Done for Overtaxed Brain-workers to Prevent Inebriety?"

DR. I. N. QUINBY, of Jersey City, also gave an extract of his paper on "The Therapeutic Action of Alcohol."

SECTION OF SURGERY AND ANATOMY.

The Section was opened by the address of the chairman, THEODORE A. MCGRAW, M.D., of Detroit, upon "The Use of the Elastic Ligature in the Surgery of the Intestines."

After paying a glowing tribute to the impetus given to abdominal surgery by Senn, and particularly to the ingenuity and skill of this eminent surgeon in devising a new method of intestinal anastomosis, McGraw briefly indicated the now well-known conditions requiring the performance of this operation. Rapidity is here, as in all cases of abdominal work, of cardinal importance. The old method of suture requires half an hour, Senn's method consumes from fifteen to twenty minutes, but a still further saving of time is desirable. One of the greatest dangers of any method requiring incision into the bowel is the escape of fæces into the abdominal cavity; hæmorrhage, too, is always a possible grave complication in all cutting operations.

With the idea of devising a method which should consume the minimum of time and which should be free from the risks necessarily dependent upon incision, McGraw first experimented with metal plates so designed that they should clamp together two bowel segments and subsequently form an opening between them by pressure necrosis. This method was, however, abandoned in favor of the elastic ligature.

The rubber ligature was previously used in Von Bergmann's clinic. Here the method consisted in constricting the approximated portions of two bowel segments by means of several rubber ligatures arranged in successive loops. The author was not aware of this work before his own investigations were inaugurated. By repeated trial he found that thin rubber cord, 2 mm. in diameter, was the best material to use. It is smooth, elastic and tenacious. By shaving one end thin it can be threaded upon an ordinary worsted needle. By stretching the rubber cord as the needle draws it through the walls o the bowel a small opening is made which is completely filled and even slightly stretched by the increased thickness of the rubber incident to the release from tension. The loops of intestine between which an anastomosis is to be made are stretched together in a straight line by means of the ordinary Lembert suture; close beside this row of sutures the rubber ligature is carried in the long axis of the bowel, including from an inch to an inch and a half of its walls; the needle is then carried through the coats of the other segment for the same distance in its long axis and out again, leaving two free ends, which are then drawn taut and firmly secured by means of a fine silk ligature. Thus the walls of the two bowel segments are puckered in the elastic ligature and firmly apposed to each other. Another row of Lembert sutures is now so placed that the ends of the ligature and the seat of approximation are completely enclosed in the peripheral lines of sewing.

In experimental work obstruction occurred at times from a too acute bending of the bowel. The puckerings, however, occasioned no inconvenience, nor did the strangulation incident to the ligature produce pain, either in animals or in the human subject.

In all animals with antiseptic wounds recovery was prompt. In not a single instance did the ligature allow of fæcal extravasation.

After twenty-four hours there was adhesion of the adjacent surfaces and partial obliteration of the folds, occasioned by tightening the ligature. After forty-eight hours the folds were entirely obliterated and the rubber was observed to be cutting through. In seventy-two hours there was a small space on either side of the liga-

ture through which water readily passed from one bowel segment to the other. At the end of the fourth day the ligature had disappeared and the anastomosis was complete, leaving free, smooth edges, with just enough plastic lymph to glue together the apposed surfaces. In all, thirty-nine dogs were employed, and in addition the method was proven to be practically valuable as applied to man in one case.

In this case the man had been a sufferer from cancer of the pylorus for three years. For three months he could retain practically no food. The temperature ranged about 100° F. On examination a fixed tumor was found. The stomach was washed out for several days with a soda-boric-acid solution. An incision was made over the stomach, beginning in the middle line and running transversely to the left. A cancer of the pylorus was found so firmly fixed that removal was out of the question. As the duodenum or jejunum could not readily be found the highest coil of small intestine was stitched to the stomach wall by a line of Lembert sutures, and the rubber ligature was made to include one and two-fifths inches of both the intestinal and stomach wall. A final row of Lembert sutures was then applied, and the external wound was closed. After exposure of the stomach the operation consumed just eleven minutes; the greater part of this time was wasted in endeavoring to pass a needle through the ends of the rubber ligature to secure them from slipping. Since ligation has been proven safely to accomplish this purpose a subsequent operation would require even less time. In dogs the whole operation can be done in three minutes.

The patient vomited once on the third day. On the fourth day the food that was taken was not regurgitated, hence it is probable that the passage from the stomach to the bowel was open at that time.

The patient suffered for two weeks from constant diarrhœa, and died at the end of that time from exhaustion.

A post-mortem examination showed that the case had run a typical aseptic course. A loop of the small intestine three feet from the ileo-cæcal valve was found firmly adherent to the stomach wall. The elastic ligature had disappeared, and there was an opening from the stomach to the gut slightly obstructed by a bridge of mucous membrane, which was caused by passing the needle too obliquely through the thick gastric wall, which had not been included in the constricting band. The application of this operation is necessarily limited by the fact that the continuity of the intestinal tract is not immediately restored. Thus, in internal strangulation, volvulus, or intussusception another method will be needed. Here Senn's plates will be found useful. In partial stenosis, however, as in cases of pyloric cancer or stricture, anastomosis by the elastic ligature is safer, quicker, and more efficient than any other measure yet proposed.

In ileo-colostomy, particularly, this latest method of anastomosis promises well, since here the danger incident to tearing out of sutures and consequent fæcal extravasation is especially great.

In gangrenous hernia the formation of an artificial anus may be anticipated by the application of the elastic ligature. Helfrich has already, in two such cases, made a lateral anastomosis by incision and stitching, with success in one instance. Here, on the ninth day after the anastomosis was formed, the gangrenous gut was excised and the healthy ends were turned in and stitched. The method by elastic ligature would, in these cases, be far more safe than is that of incision and suture.

Existing fæcal fistula or false anus is also amenable to the application of the elastic ligature; it may be employed to divide the projecting skin, or if this is not practicable, a formal operation may be undertaken, and by its aid the continuity of the intestinal canal may be restored. By this method McGraw endeavored to establish an opening between the gall-bladder and the intestine, but in this he was not successful, his results according with those of other experimenters. There was a tendency for the bile to escape beside the ligature into the peritoneal cavity. Of nine dogs experimented upon, six died. In two of the three survivors the ligature had disappeared, and the orifice was completely closed; in the third the ligature was still in place. There was still an opening between the gut and the gall-bladder, but it was very much smaller than the original amount of included tissue.

Following Dr. McGraw, Dr. T. G. MORTON, of Philadelphia, read a paper upon "Appendicitis and Pericæcal Inflammations, with Notes of Cases Illustrating Special Difficulty in Diagnosis." In this long paper nothing new was advanced. The author strongly urged early operation, operation in the intervals of recurrent attacks, and, in acute cases, excision of the appendix, followed by invagination and suture.

DR. HENRY O. MARCY, of Boston, followed with a classical paper upon "The Scientific Rationale of Modern Wound Treatment." In his remarks he quoted largely from the "Discussion upon Antisepsis," between Tait and J. William White, declaring in strong terms against the illogical and irrational arguments of the great English opponent of Listerism in its modern developments.

DR. CHRISTIAN FENGER, of Chicago, followed by a paper and illustrations of "A New Operation for Harelip." He strongly advised close suture of the mucous surfaces first; next, the placing of a certain number of tension sutures; finally, the insertion of the coaptation threads. His incision is so planned that no tissue is sacrificed.

The meeting was closed by a discussion of "Some Points in the Surgical Treatment for the Radical Cure of Hernia," by Dr. AUGUSTUS P. CLARKE, of Cambridge, Mass. The author strongly insists upon antisepsis, incision of the sac and ligature at the internal ring, the restoration of the obliquity of the inguinal canal, and, finally, closure of the wound without drainage.

SECTION OF PRACTICE OF MEDICINE AND PHYSIOLOGY.

The proceedings of the Section were opened by the address of the chairman, DR. V. C. VAUGHAN, of Michigan, on the subject of "The Growing Importance of Chemical Studies in Medical Education and in Medical Research."

The speaker began by an exhaustive description of our present knowledge of the physiological and patho-

logical chemistry of cells, and then went on to a consideration of the chemical changes of many substances in the body in health and disease. A succinct, but thorough, account of recent researches in uræmia was then given, indicating the desirability of investigations in the synthesis of urea and the relations of creatine, creatinine, and the poisonous methyl-guanidin. Among the writer's conclusions having direct practical bearings are the following: That the substances which produce uræmia are not present in normal urine; that the poisonous effects of vitiated air are not due to substances existing in the air, but formed from the altered chemistry of the body; that albumins are often absorbed without being changed into peptones. As might have been expected, the paper gave a full account of our present knowledge of the subject, and suggested many lines on which future investigations may be made with distinct advantage to practical medicine and therapeutics.

DR. J. P. CONNELLY, of Williamsport, Pa., read an interesting account of a case of "Fatty Urine Accompanying an Abscess in the Right Iliac Fossa, with Recovery." The fat appeared in the urine before general or local symptoms of the abscess were present. After fat passing for eight days, a large amount of pus was suddenly discharged, when the fat suddenly and entirely disappeared. While the fat was passing the urine was clear, without sediment; color, amber; reaction, acid; specific gravity, 1020; no albumin; no sugar. In the warm urine the fat floated on the surface, resembling castor or olive oil. It rapidly solidified on cooling, to the consistency of beef tallow, and was of a yellowish-white color. The amount of urine passed in twenty-four hours was twenty-four fluidounces. In this the fat, when collected, measured four and a half fluidounces, and weighed three and a half ounces avoirdupois. No cod-liver or other oil had been taken; there was no suspicion of deception. The blood was frequently examined for filaria, with negative results.

Dr. Connelly looked on the passage of the fat as a pressure symptom.

DR. J. W. CARHART, of Texas, read a paper on the "Use of Digitalis in the First and Second Stages of Pneumonia," strongly deprecating such use, and recommending rather veratrum viride, morphine, and atropine, or venesection.

DR. S. K. JACKSON, of Norfolk, Va., read a paper on "Tuberculin: Its Value as a Discovery, Apart from Its Therapeutic Importance, together with a Consideration of the Most Rational Mode of Employing the Principle Involved in It."

DR. H. D. GEDDINGS, of the Marine-Hospital Service, read part of a very exhaustive report on the "Use of Tuberculin in Twelve Cases of Tuberculosis and One of Lupus." The writer's conclusions were very conservative, showing the remedy to be of value only in a small proportion of cases.

DR. GEO. E. FELL, of Buffalo, read a report on "Two Additional Instructive Cases of Forced Respiration," and gave a demonstration of his apparatus, which elicited some discussion.

DR. ASA F. PATTEN, of Boston, read an exhaustive paper on the "Pathology and Treatment of Phthisis," eschewing the idea of its microbic origin, and giving various methods, hygienic and medicinal, for combating it.

SECOND DAY—GENERAL SESSION.

The general meeting of the Association was held in the Opera House, at 10.30 A.M., DR. WILLIAM T. BRIGGS, the President, in the chair.

The address on General Medicine was by DR. E. L. SHURLY, of Detroit, Mich.: "The Relations of Microorganisms and Toxæmia to the So-called Zymotic Diseases." He confined himself to a generalization of the pathologica and chemical features of the subject. He laid stress at the outset of the address upon the importance of bearing in mind the fact that the organized human body is under the influences of the forces of nature—ether, energy, and matter—with the addition of the vital force, and that the only difference between life and death consisted in a different arrangement of the molecular elements. The changes which are continually going on in the human body give rise to a vast array of physiological and pathological products, some of the latter being so noxious as to rapidly destroy life. Proteids, peptones, and ptomaines are all formed in this manner, and over forty of the latter, all more or less noxious, have been discovered. These, once formed, are received into the system and produce a general toxæmia which is characteristic of the disease which they represent. These diseases, therefore, are in reality blood diseases, due to an altered pathological condition of the blood. Many of these poisonous substances, however, are rapidly destroyed in the blood before they are able to produce any depression of the system. Others maintain their noxious property. Absorption of ptomaines from the intestinal canal may account for many of the so-called malarial diseases, the proof of which may be found in the rapid relief following the administration of brisk cathartics. Chemists and pathologists have discovered that diphtheria, tubercle, and other diseases, including gonorrhœa and syphilis, give rise to the formation of a ptomaine, which is itself the cause of the diseased condition, or toxæmia, rather than the original trouble itself. In addition, the development of the microscope has revealed the presence of immense numbers of bacilli and micrococci in the atmosphere, which play an interesting part in the production of disease. Most of the species of these bacilli are destroyed by the tissues of the body; others are destroyed by healthy tissues, but find a favorable nidus or soil in unhealthy tissues. It is probable that pathogenic bacilli never develop except when some previous disease has brought the body into the proper condition necessary for such development. This development then occurs by catalytic action.

After merely touching upon the subject of immunity and susceptibility, Dr. Shurly turned to the practical consideration of the therapeutic action which appears to be indicated by the facts obtained. He said that the main therapeutic indication is: antagonism of the action of the ptomaines and microbes within the body. Such drugs must be administered as have been found in the laboratory to be detrimental or destructive to the existence of these poisons. Thus, chlorine, iodine, the chloride of gold combined with glycerin and sodium chloride, have been found by Drs. Gibbes and Shurly to antagonize successfully the action of tubercle bacilli within the body. Hypodermic medication seems to be better adapted to the

successful treatment of these various conditions, as it appears to act more directly upon the diseased cells. Thus, Lauder Brunton recommends injections of balsam of Peru in phthisis; the bromide of gold, one-quarter to one-half of a grain, hypodermically, is lauded in the treatment of epilepsy as more valuable than the employment of the bromides in the usual manner. Dr. Shurly believes that animal poisons can be neutralized in the blood, and that this assumption will be shortly demonstrated. A sort of isomerism or antagonism exists between animal and chemical poisons, as proven in the laboratory, and this fact may be productive of tremendous progress in the therapeutic management of these cases.

Dr. A. L. Gihon's proposed amendment to the Constitution became the matter of business at 11.30. His object in presenting the amendment was to dispose of all preliminary work before the meeting of the general session. Dr. X. C. Scott, of Ohio, regarded the resolution as one which would make the American Medical Association the tail-end of all other societies, and, therefore, moved that the matter be laid on the table. Dr. N. S. Davis, of Illinois, said that the so-called Constitutional amendment was in reality not such, but merely an amendment of the By-laws. Dr. Scott's motion was then carried.

Dr. Scott's amendment to abolish the Committee on State Medicine, on the ground that the Section on State Medicine covered the work, was carried.

The motion of Dr. E. A. Wood, of Pennsylvania, that the word "Physiology" be stricken from Section I., and a new section entitled the "Section on Dietetics and Physiology" be formed, was carried.

Dr. J. C. Culbertson, of Ohio, moved that the State and geographical district societies in affiliation at this time with this Association, having a membership of one hundred or more, shall be recognized as branches of the American Medical Association. Dr. Davis moved that the proposed amendment be referred to a committee of five to be appointed by the President, and that the said committee shall confer with the State and other societies upon the desirability of such a change, and to report at the next annual meeting of the Association. Carried.

Dr. William H. Daly, of Pennsylvania, moved that in the future the permanent members have all the rights of delegates. On motion of Dr. Davis, the motion was laid on the table.

A communication was received from the State Medical Association of West Virginia, protesting against the infringement of the rights of practitioners by the laws governing the railroad surgeons. The matter was referred to a committee to consist of one from each State medical society.

SECTION OF PRACTICE OF MEDICINE AND PHYSIOLOGY.

DR. J. W. SMALL, of New York, read a paper on "The Treatment of the First Stage of Pneumonia." The treatment recommended was based on the idea of local congestion and inflammation. The author stated that in several hundred cases, in which the method was used before the second stage, the disease was arrested within twenty-four or forty-eight hours. The treatment consists in the application of external heat and friction to the extremities, hot poultices to the chest, Dover's powder and nitrate of potassium. Sometimes a single dose of 15 grains of antipyrine was given.

Dr. Goodall, of Vermont, said he had used veratrum for many years, and considered it preferable to the newer remedies. His method was to give three drops of a reliable fluid extract every three hours. This sometimes produces nausea, and at times copious bilious vomiting, but usually reduces the pulse to normal within twenty-four hours.

DR. J. W. SMALL, of New York, read a paper on the "Therapeutic Action of Tonica Water, an Alkaline Chalybeate Water from a Spring at Highland Park, Conn."

Under the title of "Some of the Remote Effects of Injury to the Brain in Delivery," DR. F. W. GOODALL, of Vermont, attempted to prove the cause of right-handedness to be some injury to the motor centres of the brain on the right side, owing to the peculiarities of the majority of presentations. Exceptional cases of right-handedness with other presentations the author referred to heredity.

The writer's conclusions were criticised from various standpoints by Drs. Eccles, Putnam, Aulde, and Cronyn.

DR. J. LEWIS SMITH, of New York, gave extracts from a paper on "Recent Contributions to the Knowledge of Diphtheria."

After a review of the wide distribution of the disease, and its high death-rate, the author considered the question of etiology, which he considered settled, the cause being the bacillus of Klebs and Löffler.

The appearance and characteristics of this organism and of the ptomaine produced by it were described, and the part played by each in the causation of the anatomical changes and symptoms detailed. Dr. Smith then considered the so-called pseudo-diphtheria, which he held to be caused by other organisms than the Klebs-Löffler bacillus, and which, though the membrane and many symptoms were similar, differed from true diphtheria in certain important particulars. The diphtheria complicating scarlet fever was one of the pseudo variety.

The writer then took up the question of the mode of contagion, giving instances proving the great vitality of the pathogenic germs.

With regard to diagnosis, Dr. Smith holds that an exact diagnosis can be made, provided the Klebs-Löffler bacillus can be demonstrated.

Dr. Eccles, of Brooklyn, thought that the writer had gone too far in claiming so much for the Klebs-Löffler bacillus, and referred to the work of Dr. Vaughn, which indicated the possibility of a number of organisms being able to produce similar effects.

Dr. Osler agreed with the writer, and said he had recently had two cases in his wards in which Dr. Welch had demonstrated the presence of the bacilli. He thought the vexed question of the relation of croup and diphtheria would be settled by such investigations as soon as typical cases of croup presented themselves.

The Chairman briefly reported his experience in three epidemics of diphtheria. In the first and second he had no difficulty in demonstrating the Klebs-Löffler bacillus. In the third, with a death-rate of 50 per cent., with no paralysis, most of the deaths being from suppression of urine, the bacilli were absent. He held, therefore, that we must be careful in the use of the term pseudo-diph-

theria, so as not to give the impression that it is a non-dangerous and non-contagious disease.

Dr. Early, of Pennsylvania, attributed the origin of diphtheria to dampness and mould.

Dr. Smith, in conclusion, remarked that the difficulty in the diagnosis was similar to that in many others, and that of the pseudo-diphtheria probably various forms would be determined. He thought the general practitioner should be able to examine for the bacillus.

DR. JAMES J. PUTNAM, of Boston, read a paper on "The Character of the Evidence respecting Arsenic as a Domestic Poisoning," giving the results of his extensive investigations.

Dr. Wolf, of Philadelphia, confirmed the statements made as to the frequency of occurrence of arsenic in the urine, but did not look on the arsenic in such cases as being a source of danger to the individual.

Dr. Osler thought there must be some difference in the conditions of various observers. He had never seen the cases of neuritis as described by the writer. He had given arsenic many times in large doses, but never with bad results.

DR. L. WOLF read a paper on "The Use of Naphthalin in Typhoid Fever," based on one hundred cases, which was discussed in connection with a paper by DR. B. M. GRIFFITH, of Springfield, Ill., on "Antiseptic Treatment and Liquid Diet in Typhoid Fever."

Dr. Osler said he had found that naphthalin did no harm and was valuable for that reason. It certainly controls diarrhœa, not only in typhoid fever, but in other diseases. It must be given in large doses. He recalled the treatment of Nathan Smith, which was purely symptomatic, making free use of fresh ale, diet, cold water, and not too much medicine.

Dr. Levick, of Philadelphia, thought much medication a mistake. His advice was to wait. He especially opposed the use of digitalis in fevers.

Dr. Kramer, of Cincinnati, questioned the rationale of using antiseptics in such cases.

Dr. Cronyn, of Buffalo, recalled the theory of King-Chambers that the condition of the blood in typhoid fever is one of super-alkalinity. He had acted on that theory for many years, using hydrochloric acid, and with great advantage.

Dr. Wolf closed the discussion. He said he could not reply to the theoretical objections to the use of antiseptics; the results could not be questioned. He described the great improvement in the treatment of typhoid fever by the German method of cold baths.

SECTION OF OBSTETRICS AND DISEASES OF WOMEN.

The Section of Obstetrics and Diseases of Women met for the second time on the afternoon of May 6th. Two subjects of very general interest had been chosen, "The Forceps," and "The Causes and Treatment of Uterine Displacements." New forceps were shown by Drs. L. E. Neale, of Baltimore, and McGillicuddy, of New York. Dr. Neale's instrument is an axis-traction forceps with metal traction bar, possessing very considerable compressing power; its cost is almost that of Tarnier's. Dr. McGillicuddy had modelled a forceps much resembling that invented by Hubert, with the difference that in the former the traction handles are detachable from the outer end of the handles, while in the old forceps there was no such separation, but axis-traction was effected by a sharp angle in the handles. The blades were those of Simpson in the cephalic portion and lock. He also showed an anti-craniotomy forceps which lessens the size of the fœtal head by compressing the upper, non-vital segment of the cranium, thus avoiding the medulla. A class of cases in which the forceps is positively indicated was described by Dr. A. P. Clarke, of Cambridge. Such are cases where the head is engaged at the brim, but uterine action fails; also occipito-posterior position under similar circumstances. When the head is movable above the brim it must be pressed down and steadied by an assistant until the forceps can be applied. Resistance of the soft parts contra-indicates forceps and calls for narcotics or anodynes followed by oxytoxics. In oblique situations of the head the forceps guides rather than forcibly rotates the head. The long forceps, of greater than usual length, is required, and is preferred by Dr. Clarke to version.

The discussion of these papers elicited the comparative cost of the various instruments, Dr. McGillicuddy's being made for five dollars, while Dr. Neale's costs eighteen dollars.

Axis-traction by tapes was commended, and forcible rotation and compression of the head were deprecated.

A very interesting and well-illustrated paper was that of DR. J. W. KELLOGG, of Battle Creek, Mich., which embodied the results of the examination of large numbers of healthy and ailing women to determine the relation between dislocation of the abdominal viscera and pelvic disease. It was observed that the so-called feminine type of respiration depended entirely on the presence of the corset and tight clothing, there being no difference between the breathing of normal men and women. The modern woman is deformed, however, by a vicious dress and lack of exercise, which result in morbid conditions of the abdominal viscera and pelvic disease. In the modern woman the relation of the waist measurement to the height is but 33 to 100, while in the Greek statue 43 to 47 to 100 is found. The abdominal viscera are readily displaced, the uterus yielding far less easily to pressure.

Headaches and neuralgias were observed to be reflexes from disordered abdominal surfaces, whose perverted function result in toxæmia. The prophylactic treatment advised was a reform in dress and calisthenic and gymnastic training. In regard to the treatment of uterine displacements when they become pathological, Dr. W. J. Asdale, of Pittsburg, described four interesting cases, two of prolapse and two of retroflexion, which he successfully treated by ventro-fixation (laparo-hysterorrhaphy). In two cases the appendages were removed. The patient had been under observation for two years after operation, and cure seemed to have resulted. In no case had pregnancy supervened.

An additional case of ventro-fixation by a single suture passing through the anterior uterine wall was reported by Dr. W. P. Chunn, of Baltimore. The appendages were removed, and, as the patient collapsed, time was taken to pass but one suture through the uterus; a cure of the displacement followed.

Dr. Asdale had employed two or more sutures in his cases. An illustration of the failure of classic symptoms in a case of displacement was narrated by a woman physician, Dr. Carpenter, of Cincinnati. Extreme ante-

flexion with small os and long cervix existed in the patient without symptoms, save neuralgia in one lower extremity. Pregnancy ending in a tedious instrumental labor cured the neuralgia and corrected the uterine condition. The vexed question of the value of pessaries in treating displacements was warmly argued. The majority favored the carefully-fitted hard pessary used for a short time as a palliative splint, or the tampon of antisepticized wool. Pessaries, however, were of very limited value and rarely effected a cure.

The question of pregnancy with ventro-fixation was raised, and recently reported cases showed that a considerable proportion went to term, while some aborted, and in one case difficult labor from atrophy of the anterior uterine wall resulted.

Dr. Howard A. Kelly, of Baltimore, stated that in his investigations he used small, carefully fitted pessaries to relieve pain caused by adhesions. He rarely continued such use for more than a short time. Ventro-fixation was a resort only when other means failed. He performed it by attaching the utero-sacral ligaments to the abdominal wall, thus not interfering with the body of the uterus.

Dr. Kellogg had succeeded in many cases by shortening the round ligaments.

The following officers were elected by the Section for the ensuing year:

President, Dr. E. E. Montgomery, of Philadelphia, Pa.
Vice-President, Dr. Bedford Brown, of Virginia.
Secretary, Dr. F. H. Martin, of Illinois.

SECTION OF NEUROLOGY AND MEDICAL JURISPRUDENCE.

The first thing on the programme was the election of officers for the ensuing year, which resulted as follows:

President, Dr. Harold N. Moyer, of Chicago.
Secretary, Dr. Grosvenor R. Trowbridge, of Danville, Pa.
Assistant Chairman, Dr. J. E. Emerson, of Detroit.

The first paper was read by Dr. B. A. WATSON, of Jersey City, N. J., on "The Diagnosis of Traumatic Lesions in the Cerebro-spinal Axis and the Detection of Malingering Referred to this Centre." This was a very interesting paper, as the speaker had conducted a series of experiments upon dogs to ascertain the lesions and pathological changes produced by concussion of the spine. In concussion he has found that the vibratory force is not only expended upon the spinal cord itself, but also upon the surrounding soft parts and adjoining organs. All tissues do not transmit the vibratory force equally well. In some tissues there can be little or no vibratory force produced, while a comparatively slight blow produces considerable vibratory force on other tissues.

He gave as an example the transmission of force applied to the nates, caused by a blow or fall, up the spinal cord to the brain. The smaller the area to which the traumatism is applied the greater the concussion. The same force distributed over a wider area produces much less concussion. He claims that concussion of the spinal cord cannot be produced by blows on the anterior part of the body, as a force sufficient to do this will cause instant death, because of the injury to the intervening viscera. According to his researches, the force of an electric shock produces the same lesion as any other traumatism. Concussion, according to the speaker, is a condition of nervous and circulatory excitation.

Rapidly-repeated slight blows produce concussion in the same manner as a heavy blow applied at one time. This has been demonstrated upon animals. The same laws hold good in cerebral concussion as in spinal concussion. The difference in symptoms is simply due to the difference in the function of these two organs. He spoke of how many writers considered hæmaturia as a symptom of spinal concussion, but, according to his observation, this was not nearly always true; it is rather due to concussion of the kidney than the spinal cord.

Concussion always produces either functional excitation or depression. In some cases the depression is due to organic lesions. The sudden development of symptoms after the reception of an injury always point to a grave lesion. The symptoms of disease of the cord come on slowly, while the symptoms of concussion are always sudden in their onset. There are always symptoms of paralysis in concussion, often both motor and sensory, but especially the former. The speaker then described a series of experiments which he had performed on dogs. In all of his experiments paraplegia occurred; it followed immediately after the traumatism. In those dogs in which there was complete paraplegia, there was never any improvement in the paralyzed parts. In some of the cases where there was incomplete paraplegia, there was slight improvement after a few days.

The speaker said that it was unfortunate for science that such a large class of conditions are classed under the head of concussion. Many of these conditions have wholly different causes and symptoms, and should be placed in separate classifications. He said that so long as the present classification was retained error must result. He spoke of how the term railroad spine was used to cover many different conditions. He classified the results of concussion under three heads: first, injury to soft parts surrounding the spinal column; second, injuries directly to the spinal column; and, thirdly, injuries to the cord and its membranes. In his experiments upon animals, the speaker has invariably found post-mortem lesions.

Out of fifty dogs experimented upon, thirty-three showed distinct symptoms of concussion during life, while seventeen did not show these symptoms, but in all of the cases post-mortem lesions were demonstrable. In no case was there a failure to find distinct evidences of concussion after the death of the animal. He believes that the vasomotor system plays an important part in concussion. According to the speaker, in the majority of instances a diagnosis is not difficult to make. In the differential diagnosis between the symptoms assumed by the malingerer and the true cases of concussion a careful history of the case should be obtained. In all cases a systematic methodical examination must be made.

In conclusion, he said that no physician should go upon a witness-stand and swear that there had been concussion of the spinal cord unless the symptoms of this condition appeared soon after the receipt of the injury. In all cases a very careful examination must be made.

DR. THOMAS H. MANLEY, of New York, next read a

paper on "The Consideration of Traumatic Lesions of the Spine Resulting from Railroad and Other Injuries; Their Immediate and Remote Results, Etiology, Pathology, and Diagnosis." He made two classifications of "railroad spine:" first, those cases showing distinct lesions; and, second, those cases showing functional disturbance, but with no demonstrable lesion.

The time allotted to the speaker was almost consumed in a description of the cord and its surroundings, and he was compelled to give an extract of the last part of his paper. In conclusion, he claimed that concussive force must always produce a lesion to cause paralysis, and that there are no distinctive characteristics of railway spine.

DR. JUDD, of Galesburg, Ill., next described an interesting case of supposed railway spine. The patient, a cattle dealer, had received a slight injury to his thumb while on his road to Chicago with a load of stock. The injured thumb was dressed and the man continued his journey, and after selling his stock returned home. He carried his arm in a sling and used it very little. A railroad attorney and a local doctor talked to him and convinced the man that he had the so-called railroad spine, and should enter suit against the company. As he was very ignorant, he accepted their suggestion and asked damages from the railroad. Dr. Judd saw the patient six months after the injury; he still carried his arm in a sling and claimed to have no use whatever of it. The shoulder was somewhat shrunken. He would not consent to the administration of an anæsthetic, and only after considerable persuasion consented to the application of electricity. The arm was apparently paralyzed, but on his taking hold of the two handles of a battery there were marked contractions of the supposed paralyzed arm. The patient was very much surprised, and expressed great joy at finding that there was no paralysis of his arm, and at once commenced to use his arm again. The atrophy that was noted by the doctor was simply due to inactivity of the part. Dr. Judd believes that the patient was not a malingerer, but was the subject of suggestions from his doctor and lawyer. He terms this condition "litigation disease," and thinks it a species of neurosis the same as hysteria.

In discussion, Dr. Frank Lydston, of Chicago, cited cases to prove that the symptoms of concussion need not necessarily come on immediately after the receipt of an injury, but six months might intervene before symptoms appear. He not only took issue with Dr. Watson upon this point, but also claimed that there are cases of concussion in which there are no demonstrable lesions.

Dr. Clevenger, of Chicago, believes that there are always symptoms in cases of true railway spine that cannot be mistaken. He also said that one point that all the speakers had overlooked was the part played by the sympathetic system in these cases. According to this speaker, Dr. Watson's conclusions from his experiments are not to be relied upon, as the arrangement of the spinal cord of the dog and man are different because of their different positions, the former being horizontal during locomotion while the latter is perpendicular.

Dr. Kiernan, of Chicago, also held the same view.

Dr. Harvey Reed, of Mansfield, does not believe that concussion always produces a demonstrable lesion, but that there is simply a disturbance of the molecular relation of the cord. He believes that permanent lesions of the cord are not due to concussion and that the effects of concussion are but temporary.

Dr. Moyer, of Chicago, thinks that there is a source of fallacy in Dr. Watson's experiments, and considers his results almost without value.

Dr. King, of Tennessee, believes that there is no such condition as concussion without a demonstrable lesion. He has never seen the analogue of "railway spine" in private practice, but has seen at least a hundred cases of this condition while in the service of different railroads. He claims that, without exception, these cases are malingerers and only assume this condition for the purpose of pecuniary gain.

Dr. Hughes, of St. Louis, spoke in favor of Dr. Watson's paper, and thought that he had tangible ground upon which to work. He also believes that the condition known as railway spine is often the expression of a latent neurotic condition, which becomes manifest because of the shock of the injury.

Dr. Diller, of Pittsburg, believes that railway spine is often the result of suggestion of the patient's doctor or lawyer. A nervous woman receives a slight injury and her lawyer suggests this condition to her, as the result of which a psychical impression is made, followed by the symptoms of this affection.

The discussion upon the subject of railway spine was quite animated, and each speaker had a theory of his own in regard to this disease.

DR. SILAS B. PRESBERY, of Taunton, Mass., next read a paper on "The Medico-legal Investigation of Deaths by Violence in the State of Massachusetts." In that State each county is divided into districts, usually four, and a medical examiner is appointed to investigate all deaths by violence. This examiner is appointed by the Governor, and holds his office for seven years. Any responsible citizen may notify this examiner of a death supposed to be due to violence, and he must at once institute an examination unless he deems it unnecessary. After being notified, the examiner takes charge of the body and a careful examination is made for marks of violence. The surroundings are accurately recorded, and if he finds no cause for suspicion, the body is delivered to the friends. If he deem an autopsy necessary, he so reports to the district attorney, or if in the city, to the mayor, who gives him authority to conduct the post-mortem. Two assistants are appointed, who assist the examiner. He may also call in the service of a chemist, if necessary. The result of the inquest is carefully recorded, one copy being filed with the attorney of the district and another with the justice.

The medical examiner does not hold the inquest, and only acts in the capacity of a medical man, the legal matters being in other hands. The fee for an inspection of a body, without an autopsy, is five dollars; with an autopsy, it is thirty dollars. A mileage fee is also allowed.

The advantages of this system over the investigation of deaths by a coroner is the lessening of expenses, promptness and accuracy of the examination, the careful recording of the investigation, and the fact that the examiner only deals with the medical aspect of the case.

DR. DILLER, of Pittsburg, next reported a case of "Idiopathic Spinal Hæmorrhage."

SECTION OF SURGERY AND ANATOMY.

The Section was called to order by the chairman, THEODORE A. MCGRAW, M.D.

The first paper read was by J. McF. GASTON, M.D., of Atlanta, Georgia, the subject being "Traumatism of the Chest." The author considered all trauma of the chest, including penetrating and gunshot wounds.

He called attention to the well-known fact that serious injury to the chest contents might result without any external evidence of violence.

Dr. Gaston was especially emphatic in that portion of his paper devoted to the treatment of penetrating wounds. He said that while all writers advised closing the external wound, if it was small, the opinions were divided as to the proper treatment of large penetrating wounds. The author advises hermetical closure of the external wound in every case. He believes that in those cases in which there is a large amount of effusion or hæmorrhage, it will be gradually absorbed, while if the wound is not closed, pyothorax is much more apt to occur. Should the wound be closed, and pus form, the surgeon may open the chest at a favorable location.

In the *Medical and Surgical History of the War*, 1 per cent. of the recorded non-penetrating wounds proved fatal and over 65 per cent. of the penetrating.

In the discussion, Dr. Mynter, of Buffalo, quoted from an article in a recent foreign journal, in which the author advised, in cases of pneumothorax from injury, the conversion of the pneumothorax into a hydrothorax. For this purpose two canulæ are inserted into the chest, one at a higher plane than the other. Through the lower of these, sterilized boric acid solution is injected until the chest cavity is filled, the air escaping through the upper canula. The canulæ are then withdrawn and the wounds closed. The liquid may then be drawn from the chest by aspiration when thought best.

The next paper was on "The Surgical Uses of Aristol," by W. C. WILE, of Danbury, Connecticut. He considered the drug entirely from a clinical standpoint. Before the attention of the profession was called to this drug he had used iodoform very extensively and with great satisfaction.

In every extensive trial of aristol he has found it to answer every purpose for which he had formerly thought iodoform indicated. He uses it freely in all forms of recent wounds, dusted on the part. In burns an ointment is prescribed. Several cases were mentioned from his practice with very pleasing results. He considered aristol superior to iodoform, because of its absence from odor and freedom from toxic properties, and is equal to the latter in therapeutic value.

In the discussion following, Dr. Newman, of New York, stated that he has examined the urine many times of patients upon whom aristol was being employed, and always without finding any evidence of its elimination by the kidneys, proving to him the harmless nature of the drug. In some of these same cases, iodine applied to the wounds was promptly detected in the urine.

Dr. M. PRICE, of Philadelphia, then read a paper on "Peritonitis from a Surgical Standpoint." He began by stating that all cases of peritonitis were the result of a surgical cause. Idiopathic peritonitis he characterized as a delusion and a myth. The prominent symptoms of the disease, he said, were vomiting and tympanitic pain, which, while generally present and pronounced, might be but slight. The temperature usually runs high at first. The pulse may be weak from the first, and becomes thready. The expression is peculiar and characteristic; the face is anxious, pinched, and the person seems to have aged several years. Constipation is a constant symptom. Tympanites may or may not be present, and, when marked, it adds to the gravity of the cases. Dr. Price considers the opium treatment the worst that could be adopted, while poultices, turpentines, etc., add to the liability of pus-formation. In an acute case, he gives saline purges, and if in three days the patient is not relieved, or if the temperature does not fall below the pus standard, he opens the abdominal cavity and drains.

By far the most prolific cause of peritonitis is disease of the uterine appendages; next in frequency comes appendicitis, and along with this, meddlesome gynecology. In five hundred cases in which Dr. Price operated or assisted, not one was idiopathic. Many of the chronic cases die of tuberculosis, which is another plea for early operation.

Dr. W. E. B. Davis, in the discussion, spoke particularly of peritonitis after perforation of the intestine or rupture of an abscess, advising immediate operation. If operation is postponed more than twenty-four hours, the case will almost surely result fatally.

The next paper was by DR. B. A. WATSON, of Jersey City, N. J., on the "Relation of Concussion of the Brain and Spinal Cord to Inflammatory and Other Morbid Changes in These Organs." The author said that, inasmuch as concussion of the brain had been pretty thoroughly investigated, he would confine himself particularly to the spinal cord. He considers the spinal cord the best-protetced organ of the body, and that concussion of this organ is much less frequent than is usually supposed. By experiment it has been found that it takes a severe trauma to affect the cord, and this in certain limited areas of the body. He does not credit rupture of the membranes or gross hæmorrhage, without fracture or luxation of the vertebræ. Partial luxation, he believes, may occur, injuring the cord, and reduction follow from the resiliency of the parts.

In concussion the force is so dissipated that the effect is diffused. In cases such as gunshot wounds, however, the force is concentrated, and a gross lesion of the cord might result. Concussion itself, he thinks, does not give rise to inflammatory action.

The last paper was that of DR. MYNTER, entitled: "Is Early Excision or Conservative Treatment in Coxitis Indicated?" The pathology was very carefully discussed, and the tubercular origin insisted upon. He considered that most cases began as an ostitis, later involving the joint. He cited several cases from his own practice, and concluded that the most useful limb and the most satisfactory results followed early excision. He showed specimens of two cases in which this plan had been followed with happy results.

Drs. Townsend, Sayre, and Ridley, of New York, were unanimous in advising conservative treatment.

THIRD DAY—GENERAL SESSION.

The general session convened in the Opera House at 10.15 A. M., the President in the chair.

DR. JOSEPH M. MATTHEWS, of Louisville, Ky., delivered the address on General Surgery. Since a review of the whole field would require too much time, Dr. Matthews limited himself to a special subject, the discussion of which does not appear in the Sectional meetings, namely, "Stricture of the Rectum: Its Etiology, Pathology, Symptomatology, Diagnosis, and Treatment." The position taken by him in the paper he confessed was for the most part contrary to the opinions of the day. Following Kelsey's classification of the causation of stricture into the congenital and acquired forms, he considered the subdivisions in turn. He denied the existence of spasm of the rectum as a variety of stricture, and even doubted its existence at all. Although dysentery is stated by many authors to be a common cause of stricture, he has never seen a case of such an origin. If such a condition existed it would be very common among the veterans of the late war, but the Pension Department has no such cases on record. He doubts the tubercular origin of stricture. He regards the prime cause of stricture to be inflammatory action, either of syphilitic, cancerous, or traumatic origin.

Secondary syphilis is the usual and only form of venereal disease giving rise to stricture of the rectum. He has never seen a case resulting from a soft sore. Considering the subject of colotomy, as advised by Bryant, of England, he concludes that it is but rarely indicated, and bases his belief upon the pathology of the disease. Incipient cancer is not an indication for the operation, nor is pain relieved by it, since the latter results from the action of the morbid process upon the nerves of the diseased portion. The passage of fæces over the cancerous portion is not productive of pain, or if it is, to but a slight degree. Dilation will relieve the trouble. Syphilis he regards as the cause of more than one-half of the cases of stricture; but he believes that colotomy is not indicated by the existence of this disease.

As regards the statistics of the operation of colotomy, it has been shown that thirty-eight out of every hundred cases of lumbar colotomy, and forty-five in every hundred of iliac colotomy, perish within twenty-four hours. The early symptoms of stricture are marked or entirely *nil*. The inflammatory process is very slow in the rectum.

So-called constipation is often the first symptom, and this is followed, as the disease progresses to ulceration, by a discharge of bloody or muco-pus, with alternating diarrhœa, flatulency, and constipation. Irritation of the kidneys and bladder is frequently present. Pain is not a prominent symptom and is often entirely absent. Acute obstruction, as a primary symptom, he has never seen. The diagnosis is easily made by the finger when the stricture is within four inches of the anus, as happens in the majority of the cases. Malignant and syphilitic srricture are similar in regard to their mode of invasion, both beginning as a deposit, which is followed in time by ulceration. Benign cases, including the traumatic forms, begin with abscesses in ulcerations which are followed by plastic deposits.

Dr. Matthews objects to the employment of rectal bougies of any form for the purpose of diagnosis, as they are apt to do more harm than good. The usual seat of the stricture is low in the rectum, and if above this, what is the advantage secured by employing a dangerous instrument which can do no possible good? In considering the treatment he strongly opposed gradual dilatation as being apt to cause the throwing out of more plasma and the increase in size of the stricture. Forcible divulsion is much preferable. He prefers the method of incision, especially multiple internal incision, followed by the introduction of a drainage-tube, around which antiseptic dressings are to be packed. The objection to the external form of incision is that in division of the sphincter sometimes incontinence of fæces results. Electrolysis is too slow a process to be of any value, excision, or better, extirpation, is much to be preferred to colotomy, since the disease is removed by the former and only palliated by the latter. The entire length of the rectum may be removed without interfering with the action of the sphincter. Colotomy, he claims, is rarely justified, if at all. Whenever the stricture, other than the malignant form, is located in the movable gut, then exo-femoral colotomy should be performed, provided that the bowel below the seat of operation be closed to prevent the passage of fæces beyond the opening in the bowels.

The report of the Board of Trustees for the year ending March 31, 1891, was submitted. The circulation of the *Journal* is 5450 copies. The cost of publication and editing, $23,373.97.

The receipts for the year have been $14,465.59. From the general funds $8909.38 were drawn, leaving a balance of $762.40. The amount in the hands of the Trustees is $4503.39.

An editor has not yet been selected, the matter being in the hands of the Trustees. It was recommended that a suitable building be erected for the publication office. The report was signed by P. O. Hooper, President; John B. Hamilton, Secretary.

The Committee on Nominations made the following report of officers selected for the ensuing year:

President.—H. V. Marcy, M.D., of Boston, Mass.

Vice-Presidents.—Willis P. King, M.D., of Missouri; Henry Palmer, M.D., of Wisconsin; W. E. B. Davis, M.D., of Alabama; W. E. Taylor, M.D., of California.

Treasurer.—Richard J. Dunglison, M.D., of Pennsylvania.

Secretary.—William B. Atkinson, M.D., of Pennsylvania.

Librarian.—George W. Webster, M.D., of Illinois.

Trustees of Journal.—W. W. Dawson, M.D., of Ohio; W. W. Potter, M.D., of New York; J. H. Rauch, M.D., of Illinois.

Judicial Council to fill Vacancies.—H. O. Walker, M.D., of Michigan; W. L. Hubbard, M.D., of Indiana; Hunter McGuire, M.D., of Virginia; G. L. Porter, M.D., of Connecticut; C. H. Hughes, M.D., of Missouri; A. M. Owen, M.D., of Indiana; D. R. Didamos, M.D., of New York.

Place of meeting in 1892, Hot Springs, Arkansas.

Time of meeting, first Tuesday in May.

Special committees were named for State Medicine, International Medical Congress, and Necrology.

It was moved by Dr. Walker, of Michigan, to strike out "Hot Springs" and insert "Detroit." Carried.

The report of the Nominating Committee was then passed as amended.

Dr. Scott, of Ohio, nominated Dr. H. O. Walker as

Chairman of the Committee of Arrangements for the meeting in Detroit.

Dr. N. S. Davis moved as an amendment to the report that the time of meeting be changed to the first Monday in June. Carried.

The report of the Committee on the new Medical Cabinet Officer was received, recommending the petitioning of the next Congress to appoint such an officer, to be known as the Secretary of Public Health. Adopted as read.

NEWS ITEMS.

University of Pennsylvania.—The Medical Department of the University of Pennsylvania held its 117th annual commencement on Friday, May 1st, at 12 o'clock. The degree of M.D. was conferred on 133 candidates. THE MEDICAL NEWS prize of $100 was awarded to Dr. Joseph B. Sailer for an experimental essay. The Alumni prize for the highest average during the three years' course was awarded to Edward C. Ellett, of Memphis, Tenn.

Dr. James Tyson pronounced the valedictory address, in the course of which he alluded with much feeling to the death of Dr. Joseph Leidy, which occurred the day before commencement.

PROF. ROSWELL PARK will deliver the remaining four lectures of the Mütter Course on Surgical Pathology in the hall of the College of Physicians of Philadelphia, on May 12th, 13th, 14th, and 15th, at 8.15 P.M. Subject: "Surgical Bacteriology." Lecture VII. Actinomycosis; malignant œdema; rauschbrand; anthrax; glanders. Lecture VIII. Tuberculosis; introduction to a study of mixed and secondary infections. Lectures IX. and X. Mixed and secondary infections—sequelæ of pneumonia, typhoid, exanthemata, cholera, dysentery, erysipelas, gonorrhœa, syphilis, tuberculosis, etc. The medical profession are cordially invited to attend.

A Singular Accident.—On April 18th Rev. Dr. Bothwell, of Brooklyn, while withdrawing the cork from a medicine bottle was suddenly seized with a fit of laughing during which, in an effort at inspiration, the cork was drawn into the trachea. The presence of the foreign body immediately caused a severe attack of coughing accompanied by marked and very painful dyspnœa. Several attempts were made to dislodge the cork without success, and on the day following the accident the patient was removed to the Brooklyn Hospital, where tracheotomy was performed with the intention of removing the cork through the wound. It was found, however, that it had been drawn down deeply into the bronchus, and all efforts to remove it were futile. A delicately-made probang-like instrument, concealing within it a small corkscrew, was inserted into the bronchus, and an attempt to dislodge the cork in this manner also proved of no avail. It was suggested that if the ribs over the site of the cork were removed the bronchus might be opened. The condition of the patient, however, would not admit of this operation, and he died on May 3d of exhaustion.

Foreign substances in the upper part of the trachea are not uncommon accidents, but there are not many cases on record where so large a body as a cork has been drawn down so deeply into the bronchus as in this case.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM APRIL 28 TO MAY 4, 1891.

By direction of the Secretary of War, JAMES C. MCKEE, *Lieutenant-Colonel and Surgeon*, having been found incapacitated for active service by an Army Retiring Board, is relieved from further duty as Attending Surgeon and Examiner of Recruits at Philadelphia, Pa., and will proceed to his home, and report by letter to the Adjutant-General of the Army.—Par. 3, *S. O. 96, A. G. O., Washington*, April 28, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MAY 2, 1891.

LUNG, GEORGE A., *Assistant Surgeon.*—Granted two months' leave of absence.

HOEHLING, A. A., *Medical Inspector.*—Detached from Navy Yard, League Island, and waiting orders.

JONES, W. H., *Surgeon.*—Ordered to Navy Yard, League Island.

NORTON, O. D., *Passed Assistant Surgeon.*—Detached from Naval Hospital, Chelsea, Mass., and waiting orders.

CORDEIRO, F. J. B., *Passed Assistant Surgeon.*—Ordered to Naval Hospital, Chelsea, Mass.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE TWO WEEKS ENDING MAY 2, 1891.

BROWN, B. W., *Assistant Surgeon*—Detailed as Medical Officer Revenue Steamer "Rush," during summer cruise, April 14, 1891.

AUSTIN, H. W., *Surgeon.*—Detailed as member of Board of Examiners Marine-Hospital Service, April 21, 1891. Detailed as Chairman of Board for Physical Examination of Officers and Candidates Revenue-Marine Service, April 29, 1891.

GODFREY, JOHN, *Surgeon.*—Detail as member of Board of Examiners revoked, April 21, 1891.

IRWIN, FAIRFAX, *Surgeon.*—Detailed as Recorder of Board for Physical Examination of Officers and Candidates Revenue-Marine Service, April 29, 1891.

CARRINGTON, P. P., *Passed Assistant Surgeon.*—To proceed to Fernandina and Jacksonville, Fla., as Inspector, May 1, 1891.

STIMPSON, W. G., *Assistant Surgeon.*—When relieved, to proceed to Savannah, Ga., for temporary duty, May 2, 1891.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication, or 250 reprints will be furnished instead of payment, provided request for reprints be noted by author at top of manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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THE MEDICAL NEWS.

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ORIGINAL ARTICLES.

MINOR UTERINE SURGERY.

BY J. M. BALDY, M.D.,

PROFESSOR OF GYNECOLOGY IN THE PHILADELPHIA POLYCLINIC AND COLLEGE FOR GRADUATES IN MEDICINE.

IN these days of uterine and pelvic surgery the minor operations on the uterus, of which we used to hear so much, have been in great measure lost sight of by students of the diseases of women. In consequence of this very fact of being overshadowed by newer and more alluring procedures, fortunately many of the abuses of the old days have disappeared from the practice of those working in gynecology in our large medical centres. Unfortunately, this is not equally true of the vast majority of practitioners, either in the cities or in the rural districts; the old teachings and the old books still manifest too much influence. The time has come when we should carefully look back over our work of the past few years and see what lessons it has taught us.

The one great fact which stands staring us in the face in this connection is, that most of the troubles which we have been in the habit of considering as situated in the uterus are not in that organ at all. Thus, at one sweep we are able to dispose of a large proportion of the so-called uterine diseases. It is then manifestly improper and dangerous to direct treatment to the uterus when that organ is perfectly healthy, and the trouble is situated in the neighboring tissues—most probably of an inflammatory nature. In a large proportion of the remaining so-called uterine diseases the womb itself is undoubtedly affected, but the lesion in the uterus is only secondary to a lesion in the uterine appendages, or, if it was the seat of the primary disease, its continuance is surely due to the inflammatory condition of the contiguous organs. Here, again, a treatment directed against the uterus itself is both irrational and dangerous. This leaves us but a comparatively small number of cases of pure uterine disease. Such is the true situation. Uterine disease such as metritis, endometritis, pathological displacements, etc., uncomplicated by other and more serious troubles, is the exception rather than the rule, and in a large dispensary practice during the past few years the small number of such cases which have come under observation has been a matter of surprise to me.

It would seem, then, that the old methods proposed for the treatment of uterine diseases were not in themselves necessarily faulty, although most of them have undoubtedly been carried to excess, but that the trouble lay in faulty diagnosis, and consequent application of methods of treatment unsuitable for the true disease. If the true lesion be overlooked, and many of the minor operations be performed, the result is sure to be disastrous in a certain proportion of cases. How often an acute pelvic inflammation will be lit up will depend in great part on how carefully the given manipulation is carried out.

All this being true, there still remain a certain proportion of diseases which are uterine, pure and simple. The fact that in the past so many mistakes in diagnosis have been made, and that disastrous results have followed the application of certain treatments, should not blind us to the value of these same methods in cases in which they are properly applicable; and yet at the same time a proper limit should be put to their use.

The Uterine Sound.—On the whole, it had been better for womankind had this instrument never been invented. For the application of the electric current it has its uses, and in an occasional case where one is uncertain as to the connection of the uterus with a given tumor it may possibly give some definite information. For the purpose of measuring the depth of the uterine cavity, or for locating the position of the fundus, as it is generally used, it is absolutely superfluous. Anyone who is forced to use it for these purposes, unless it be in rarely exceptional cases, must confess to himself his lack of even an ordinary amount of manual dexterity. For replacing a displaced womb it is a dangerous instrument, and its use is very painful. A movable uterus can be invariably replaced by bimanual manipulation, with the patient on the back, or in the knee-chest position, with the aid of a tenaculum and a repositor. If the organ is adherent it no longer comes under the head of simple uterine disease, and should then be dealt with by other and safer procedures. The uterine sound may be used with perfect safety in careful hands; but, as ordinarily employed, it is capable of causing considerable traumatism, and of carrying septic material into the uterine cavity.

Dilatation.—This operation is one which has been much abused. It is capable of much good or much harm, depending upon whether it is used carefully

and in suitable cases or not. Personally, I have never had any permanent bad results follow its use. On the contrary, I have seen severe dysmenorrhœa relieved and even permanently cured: in not a small proportion of cases have I observed pregnancy follow dilatation. Patients have come to me suffering from a pelvic inflammation following a dilatation performed by others, but everything pointed to the fact that the pelvic disease had existed first and that the operation had been performed probably under a mistaken diagnosis for the relief of symptoms produced by the diseased appendages. In but one case have I had an inflammatory attack follow this operation when there was no complicating disease. In that case I made an incomplete dilatation without ether upon the dispensary table, in a young woman, married for five years and sterile. The inflammatory attack cleared up within a week, she soon conceived, and a month ago I delivered her safely of a large, healthy baby. She made a perfect and uncomplicated recovery. I should be exceedingly loath to discard the dilators from my armamentariun, and can only attribute serious accidents following their use to a wrong diagnosis or a faulty use of the instrument.

Intra-uterine Medication.—There is undoubtedly a limited field for the application of drugs to the uterine cavity. It should not be forgotten, however, that it is often only supplementary to other treatment. It is just as rational to expect results from local applications to the uterine mucous membrane, as from applications to the mucous membrane of the nose and throat. The fault here is much the same as in other minor operations—either a wrong diagnosis is made, and local applications are used to the exclusion of other and probably better methods of treatment, or they have been injudiciously and rudely applied. Certainly in chronic endometritis we may expect some good from them, especially after the application of the curette.

The Curette.—This instrument, in properly selected cases, is invaluable. In my own hands the dull curette has proven worthless, and I much prefer a sharp one. Of course the instrument is capable of harm, but so is every other that is used in surgery. If even ordinary precautions are taken in selecting cases and manipulating the curette, no damage will follow its application. For affections of the endometrium following labor, or of a fungoid character, it is exceedingly useful; I know of nothing which will take its place. In removal of retained clots, etc., in the puerperium, the finger will be found to be more certain.

Operations on the Cervix.—The splitting up of the cervix for dysmenorrhœa and sterility has fallen into deserved disuse; all that can be accomplished in that direction can be done with the dilators.

Emmet's operation for the closure of lacerated cervix should meet much the same fate, at least in the vast majority of cases. The only excuse for the number of such operations which are being continually performed is a fear of subsequent cancer. A simple, uncomplicated cervical tear causes no more trouble or inconvenience to the patient than does a woman's ear which has been torn through by her earring. The ear would be repaired for cosmetic effects; the cervix is hidden from view, and that factor would not come into consideration. Most women have lacerations of the cervix of more or less degree. If the lips are thickened, everted, and eroded, they will need treatment. Oftentimes simple scarification, followed by the application of iodine and glycerin tampons, will reduce this condition and leave a clean, healthy tear—one which will remain so until the end of time. If the lips cannot be brought into a healthy condition, or if the uterus is subinvoluted and the endometrium diseased, the case may resolve itself into an operative one; but even here a trial with electricity will often disappoint the surgeon. In my practice it is rare to see a lacerated cervix which calls for surgical repair. Cases which come to me from other men, who have advised an operation, get well without it. Oftentimes the symptoms for which the operation was proposed were found to be due, not to the torn cervix at all, but to other troubles, principally constitutional.

It is the easiest thing in the world to re-light a pelvic inflammation whilst repairing a cervix, and I have seen this result follow such practice only too often.

Taking it all in all, I decidedly approve of minor uterine surgery in the field to which it is applicable, but it must be borne in mind that this field is a limited one, and one which becomes more and more narrow as our diagnostic resources increase.

CERVICAL ADENITIS.

BY BENJAMIN T. SHIMWELL, M.D.,
DEMONSTRATOR OF SURGERY IN THE MEDICO-CHIRURGICAL COLLEGE, PHILADELPHIA, PA.

THE occurrence of this condition in children, with its consequent results, is of such frequency that it is necessarily a matter of no little import.

The consideration of this subject will be confined principally to the treatment of the disease, especially the surgical means to be employed. The endeavor will be made to prove the advantage obtained from the radical treatment. This is based on an experience of many cases, which have proven the value of positive work, aided by definite aseptic rules. Close adherence to antiseptic principles has enabled us to place this treatment on a secure footing.

The annoyance and anxiety caused by a suppurating cervical gland have given way to a certainty of results, with less labor and loss of vitality. The suppurating scrofulous neck has been converted into a simple abscess which is easy of treatment.

It is not in the province of this paper to discuss the germ development as a factor in this condition, but it accepts the fact that it is proven; neither is it requisite to discuss the question whether the cocci have been excreted from the blood, or whether they have spread from the mouth along the salivary ducts.

There is a class of cases that have been placed in the category of scrofulosis, though I am not prepared to accept as positive evidence the wholesale classification under this head. While I must admit it in part, I argue from the basis, so claimed by its advocates, that this condition does arise in those of low vitality.

Let us examine into the physical state of children of tender age. How many are there who are up to the standard? Lack of care or proper feeding and attention at an age when this is most required has a positive tendency to produce this condition independent of any family history.

Lymphatic stasis, at this age, is the rule, not the exception. The examination of the neck in children, especially between the ages of two and ten years, shows marked glandular engorgement.

This form of adenitis is a local manifestation of a constitutional vice. It is more apt to be chronic in character, yet at times it takes on acute action which results in destruction, not only of the glandular, but also of the cellular structure. There may be only enlargement of the gland with suppuration of surrounding cellular tissue.

The peculiarity of scrofulous adenitis is its tendency to caseation; but in the neck it is more apt to result in softening, forming a whitish, whey-like fluid, holding a curd-like detritus. Yet it is not scientific to place in this list every case of caseation, for it is beyond doubt that this condition does occur in poorly-nourished children who show no history of scrofula.

Enlargement of the cervical glands frequently takes place in comparatively healthy children, in whom there is no cachexia. This is always charged to exposure in change of temperature, producing suppression of cutaneous perspiration, with glandular engorgement as a sequel. This is not a scientific explanation of the cause, yet in the absence of any known factor it is generally accepted.

Septic adenitis is due to absorption of septic products from the fauces, as they occur in scarlet fever, diphtheria, tonsillitis, and aphthous affections. We find at times that the tumefaction of the glandular structure may extend beyond the simple inflammatory into the suppurative stage, yet it is surprising to what an extent suppuration may take place in the surrounding cellular tissue without any breaking down of the gland structure proper.

The amount and location of the deposit generally governs the glandular involvement. When pillars and fauces are involved, then marked engorgement is apt to be present. It is less likely to occur when the tonsils alone are involved. Yet we see many cases of extensive faucial complication with little gland trouble.

The importance of early operation is not appreciated, especially in the acute or septic abscess, until the anatomical arrangement of the deep cervical fascia is understood.

While the arrangement of this fascia limits the direction of the abscess, it is not to be supposed that every case of suppuration follows its course, for it is evident to us all at times that the inflammatory action may be such that the continuity of these spaces is limited and the abscess circumscribed. Still again, how often have we seen a violence of action so great that there seemed to be no limit to its course?

The superficial fascia has no import in this disease.

The deep fascia is a dense membrane arising from the seventh cervical vertebra and the ligamentum nuchæ, and passes forward across the neck until it reaches the posterior border of the sterno-cleido-mastoid muscle; it there divides into an anterior and posterior leaflet. The anterior leaflet passes over the anterior part of the muscle to unite with the opposite side, and then passes upward, covering the masseter muscle and parotid gland, making the masseteric and parotid fascias, and thence passes down to the clavicle and sternum. This superficial layer is strong enough generally to prevent the progress of abscesses to the surface and would compel or encourage them to take deeper positions. The posterior leaflet passes behind the sterno-mastoid to unite with the anterior leaflet at the anterior border of the muscle. It then gives off a process which passes behind the hyoid depressors, invests the thyroid body and front of the trachea, and passes down in front of that tube and the large vessels to the fibrous layer of the pericardium. It also gives off a layer—the pre-vertebral layer—which passes behind the pharnyx and gullet and descends into the thorax behind the œsophagus. The sheath of the carotid artery, jugular vein and pneumogastric nerve is made by processes from the posterior leaflet and the pre-vertebral layer.

Henke, by injecting gelatin into the interspaces of the cervical region demonstrated their relations, as follows:

"*1. The capsule of the submaxillary gland.* It forms a completely closed envelope to the gland, from which continuations extend to the deep and superficial fascias.

"*2. Peri-visceral interspace.* The connective-tissue planes or interspaces situated between the pharyngeal group of laryngeal muscles (hyo-thyroid, sterno-hyoid, and sterno-thyroid) anteriorly, and the larynx, thyroid gland, and trachea posteriorly. It communicates with the anterior mediastinum. Perforation of a suppurating thyroid gland leads to invasion of this space, with subsequent compression of the trachea.

"*3. Retro-visceral interspace.* The interspace between the larynx and œsophagus in front and the vertebral column behind. It communicates with the posterior mediastinum.

"*4. Peri-vascular interspace.* This interspace contains the carotid artery and jugular vein. It communicates with the anterior mediastinum along the course of the large vessels, and is important on account of the frequent suppuration of the group of lymphatic glands situated in front of, and external to, the jugular vein. Abscesses of this space displace the sterno-mastoid muscle outwardly; they extend along the vessels downward, and, if left to themselves, either perforate the deep and superficial fascias and the skin near the clavicle, between the lower end of the sterno-mastoid muscle and the trachea, or make their way along the vessels into the anterior mediastinum.

"*5. Intermuscular space.* An interspace situated at their crossing between the lower third of the sterno-mastoid and omo-hyoid muscles. This space owes its origin to the sliding of the contiguous muscles upon each other, and is limited posteriorly by the scaleni. It contains a group of lymphatic glands situated near the posterior edge of the lower third of the sterno-mastoid muscle (supra-clavicular glands), and communicates inward with the retro-visceral space, and along the subclavicular vessels with the axillary cavity. Supra-clavicular abscesses usually extend into the armpit."

These experiments show the course that abscesses are liable to take. The difficulty in treating is to secure proper drainage.

Simple glandular inflammation does not require any special discussion. Special septic or non-septic inflammations must by their gravity call for knowledge of cause and effect.

External manifestation is no evidence of trouble more deeply seated. An engorgement of the cervical region, with all the evidence of superficial inflammation, will often, on incision and exploration, show that the location of the pus sac is deep in the tissues of the neck, extending in some cases to the retro-visceral space. These are the cases where injudicious applications would give serious results. It can readily be seen how destruction would take place in this location before softening and sloughing of tissue would go on sufficiently to give external manifestation.

The treatment is modified by the cause. It is promotive and radical.

In those cases that come under the head of scrofulosis, the preventive treatment is not one of easy management. The outline of treatment for this affection is too well known to need discussion. It should be obligatory upon us to so look over the children of our *clientèle* as to place them in such a condition that will, if it does not entirely avert, at least modify any outburst.

Too little attention is given to the growing child unless it is positively ill. Its food, hygiene, exercise, schooling, should all be the physician's care. The pinched face, thin neck full of enlarged glands, skinny legs, and tumid belly should be changed. By doing this in time of seeming health many after-ills might be prevented.

In the septic form the preventive treatment is more positive. To prevent the absorption of septic material from the throat is the object. This is met by means that will get rid of the deposit and prevent its absorption. There is one thing to be avoided, and that is anything that will tend to lower the patient's vitality. Stimulate for effect. Give food in sufficient quantities. Keep the emunctories free. If these fail, septic infection takes place. This brings us to the surgical consideration of the disease.

It is at this place I wish to enter my protest against the use of poultices. I have been forced to this conclusion, not only by scientific considerations, but by actual experience. I am emphatic when I say that the day of poultices has gone by. I wish to lay stress on this, for, the moment glandular enlargement appears, the patient is swathed in hot flaxseed, repeated *ad infinitum*. I must admit it is true that heat favors relaxation in the beginning congestive stage. I deny its efficacy when it gets beyond that point.

The scientific interest in the disease lies in the question, Which has the more vitality, the cocci or the phagocyte? After the inflammatory stage has set in, heat and moisture only tend to soften and lower the vitality of the tissue and increase the vitality of the cocci, thereby increasing their development with conseqent destruction.

It has been my experience that after glandular inflammation has been fully reached, all things being equal, suppuration is always present. Still, inflammation may be present and the general condition be well maintained or improved; then, possibly, suppuration does not occur. When we see the engorgement persisting or increasing, and the general condition not maintained or decreasing, then pus is of necessity present. If the latter, and the pus be not interfered with, your patient dies as much from septicæmia as from the primary disease.

What, then, is the treatment? A clean pair of hands and a clean knife.

In the beginning of septic infection warm applications may (?) favor relaxation. Massage of the parts and absorbents in lanolin give, at times, good results. Keep up the systemic treatment;

stimulate for effect; the nearer the patient gets to the normal condition the less the chance for infection. If this treatment does not abate the condition, then radical measures must be taken.

The first step in the operation is the preparation of the patient, for to be successful thorough antiseptic precautions must be taken. The neck is to be well scrubbed, then washed with ether or alcohol, and afterward with bichloride solution, 1 to 1000. Every particle of dirt must be removed. If time allows, the neck should be wrapped in bichloride towels. The child is etherized and placed on the table in a good light, the head being so arranged that the suppurating side is made as prominent as possible.

The anatomical relation of parts must be carefully noted and the location of the adenitis outlined. The direction of the line of incision is made to take advantage of the platysma myoides muscle; by this we secure perfect dilation of the superficial wound.

I have always followed the method suggested by Hilton in opening abscesses in important regions. The skin and superficial fascia are incised; the knife is then laid aside and the grooved director used; the deeper layers are then torn asunder until the pus sac is found. The director is thrust through it, which is known by escape of pus. Having done this, a pair of strong narrow-blade dressing or bone-forceps is inserted through the opening; having entered the sac this is then opened and drawn out with the blades apart; this tears the sac and superimposed tissues, allowing free exit to the pus. The well-asepticized finger is then introduced to find the extent and character of the cavity. All loculi are broken down to make the cavity one. This done, the sac is well irrigated, and this is carried on until every particle is washed out. If the irrigant has returned clear and then shows even the slightest amount of pus, the finger must be re-introduced to discover the source of its exit. This is important, for it is a sign that complete evacuation has not taken place. It is a reason why recovery is at times slow; the condition has not been entirely removed.

The drainage is governed by the location, size, and character of the cavity. Make a counter-opening, if necessary. Use rubber drains if the sac is situated deeply and is of considerable size; catgut if more superficial and smaller. Iodoform is used, bearing in mind the idiosyncrasy to it in children. Bichloride gauze in large, well-crumpled masses is applied; no compresses are to be used; all the dressing is to be held in place by bandage. This is the method in simple phlegmon.

When gland destruction is present it requires more care; the same method of incision is used; the broken-down gland is removed by the finger, knife, or curette, and its removal must be thorough. The finger is a very useful and safe instrument. Careful exploration with the finger is to be instituted. Here the rubber drain *must* be used. If the cavity remaining be superficial, careful packing with iodoform gauze is advisable, being sure to get the gauze in contact with every part of the wound.

The changing of the first dressing is to be governed by the discharge. The rubber drain is removed as soon as possible and catgut substituted if necessary. A cervical phlegmon, with non-removal of glands, should get well under three dressings.

Bichloride solutions should never be used, unless they be well washed out with some other antiseptic.

I have found silico-fluoride of soda, half a grain to the ounce, an excellent non-toxic antiseptic. Thursch's boro-salicylic acid solution has also given me good results.

Under this method we find that pain and fever abate at once, with lessening of all other symptoms.

In conclusion, there is one thing to which I would call attention in operations in this region, and that is shock. This is entirely out of all proportion to the amount of interference. Therefore, it is necessary that you should be sure of the ability of your ether-giver.

MALIGNANT DISEASES OF THE DEEP LYMPHATICS OF THE NECK.

BY OTTO JUETTNER, A.M., S.M., M.D.,
OF CINCINNATI, OHIO.

THE neck is a region of the greatest anatomical and surgical interest, because of the intricate and intimate aggregation of the vital structures which it contains. The following history is given on account of the many interesting features which the case presented from the time it came under observation until the patient was discharged.

In the beginning of this year, Christian H., aged fifty-six years, was referred to me by one of my professional friends on account of very distressing dyspnœa. The patient was robust in appearance, and, according to his own statement, had always been in perfect health. His family had shown, for several generations, a strong tendency to malignant disease. Six or seven months before consulting me the patient began to complain of soreness in the right side of his neck. Pressure over the line of the carotid artery produced sharp pain. In a short time a well-marked indurated growth appeared in this region. The tumor gradually became more and more pronounced, and within six months after the first appearance of local symptoms grew into a hard, immovable, uniform mass, extending in the line of the cardia from the lower jaw to the clavicle. The growth was about the size of a moderately large cocoanut, and was unyielding, and could neither be lifted from its bed nor be shifted from side to side. Dysphagia finally became so great that swallowing even liquid food was performed with some

difficulty. As the result of pressure by the tumor upon important nerve-trunks incipient motor paralysis and paræsthesia of the right arm appeared, and there was very distressing dyspnœa. In the face of all these symptoms, and the gradual reduction of the patient's strength and weight, the malignancy of the growth seemed evident, and this diagnosis was subsequently confirmed by a microscopic examination of the tumor.

The question of giving the man relief by operative procedure resolved itself into the choice between removal of the tumor or tracheotomy. Extirpation of the growth, although a much more difficult and dangerous operation, offered not only relief of the dyspnœa, but also a chance of recovery, while tracheotomy could only give temporary relief. When the nature of the two operations was explained to the patient he immediately decided in favor of the radical operation.

The operation for the removal of the growth was performed at the Good Samaritan Hospital, January 23, in the presence of Drs. Orr, Juettner, Sr., Beckler, and Walker. An incision extending down to the tumor was made from a point midway between the angle of the lower jaw and the mastoid process to a point about one inch above the junction of the outer and middle thirds of the clavicle. The superficial cervical fascia, the platysma, the deep fascia and part of the sterno-mastoid and trapezius muscles were divided. A dense network of fibrous bands surrounded the tumor, and bound it firmly to the contiguous structures, particularly to the inferior maxillary bone. By means of the handle of the scalpel and my index finger the growth was slowly isolated. Its deep attachments were intimately blended with the carotid sheath and the chain of lymphatics accompanying the carotid artery. Upon lifting the tumor from its socket the interior of the cavity presented an anatomical and pathological condition of unusual interest. The common carotid, exposed for a distance of at least a half-inch, could be seen pulsating violently. Five or six enlarged glands, about the size of hazel-nuts, lay in contact with the arterial sheath, arranged like peas in a pod. A meshwork of nerves, arteries, and veins covered the greater portion of the interior of the cavity. The muscles of the affected region had slowly yielded to the pressure exerted by the neoplasm and had become atrophied. The omo-hyoid, for instance, could be traced as a delicate fibrous band, emerging from the submaxillary triangle, and lay loosely among the other abnormally located and altered structures.

After the removal of the enlarged glands the cavity was carefully cleansed and packed with sublimated gauze, and the patient was returned to his room. In connection with the after-treatment I cannot extol too highly the excellence of peroxide of hydrogen as an antiseptic agent. The patient reacted satisfactorily, and left the Good Samaritan Hospital eight days after the operation, with a healthy and rapidly granulating wound.

The intricate and close arrangements of important bloodvessels, with the corresponding danger of hæmorrhage, during and after-operation, makes the neck a kind of surgical *noli me tangere*. But the amount of blood lost is not always in proportion to the extent of operation. It is this feature which makes the foregoing case worthy of notice. In spite of the fact that the operation was a veritable dissection of the right side of the neck, the quantity of blood lost did not amount to one ounce. The extent of hæmorrhage accompanying or following operations on the neck depends in no small degree upon the care taken in examining parts before dividing them. In all operations in the cervical region the rule should be *festina lente*.

Malignant disease of the deep lymphatics of the neck is always serious. The clinical history of most cases is one of intense pain. In its incipiency the symptoms of malignant disease of the deep lymphatics are obscure, or they may be absent. When the case has progressed to a point when the diagnosis can be made, the prognosis is hopeless. Aside from the fatal termination of these cases *per se*, there is danger of serious hæmorrhage caused by ulceration of bloodvessels contiguous to the tumor. In the non-ulcerative malignant tumors of the neck, the only mode of treatment worthy of mention is complete extirpation of the growth, which, however, is by no means a trifling operation, and must be carefully weighed in the mind of the surgeon before being decided upon. Postponement of the inevitable end by means of an operation is justifiable in certain cases. If the patient survives the operation he may enjoy a short period of freedom from pain. Within a few weeks or months the disease will return, however, with renewed malignancy. This is the uniform history of these cases. In the foregoing case there is as yet, five weeks after the operation, no signs of recurrence. The patient has unobstructed respiration, and his weight has not decreased since the operation. The questions of vital interest are, How long will this so-called recovery last, and, Is the operation justifiable in the face of certain recurrence? The change in the condition of my patient, from one of indescribable agony to one of ease and comfort, speaks volumes in favor of the operation.

EXCISION OF SPINA BIFIDA.

BY IRA K. GARDNER, M.D.,
OF NEW HAMPTON, IOWA.

SPINA BIFIDA is one of the most serious malformations which we are called upon to treat in infantile life.

I desire to make this article brief, and consequently will not discuss the pathology, diagnosis, or prognosis of spina bifida, but will describe its treatment at once, as illustrated by a case which

came under my care. The treatment of this congenital malformation is divided into two classes—palliative and curative.

The protection of the tumor with a soft, hollow truss, and the application of a simple cerate or collodion to the skin, if it is thin or seems likely to ulcerate, are sufficient to fulfil the first indication.

The curative plan of treatment is usually by puncture, injection, ligation, or excision. I treated my case by puncture and excision.

On May 24, 1886, my partner, Dr. H. M. Mixer, and I, were requested to examine a female child, two months of age, with a congenital tumor about the size of a hen's egg, situated on its back in the lumbar region. Upon examination it was promptly diagnosed as spina bifida. The skin was normal in appearance over the surface of the tumor, except near the apex, where it was thin and of a dusky color. The tumor was sessile. The child was well nourished. There was neither hydrocephalus, paraplegia, nor paralysis of sphincter muscles, and there had never been any convulsions. There was a simple talipes equinus. Dr. Mixer and I punctured the tumor with a medium-sized aspirating needle, and a few drachms of a light-colored fluid of a slightly alkaline reaction were withdrawn. No symptoms of collapse or convulsions followed. After four days the parents returned with the child. The tumor had again filled with the fluid. It was evacuated of its fluid at this time, and again on May 30th, June 8th and 18th, but refilled after each operation. The child continued to thrive and there was no decrease in the size of the tumor. The patient was not seen again until January 15, 1887, when nearly two ounces of fluid were withdrawn.

Nothing more was seen of the case until April 12th of this year. The child was now fourteen months old. Its general health was good. The tumor had increased considerably in size and measured nine and a half inches in circumference and was still sessile.

The operation of excision was now considered. The many failures and few successes attending this operation were stated to the parents. After thinking the matter over they decided to have the operation performed, which was somewhat reluctantly consented to on our part. The operation for its removal was performed April 15th. An anæsthetic was administered and a curved incision extending through the skin and sac was made on one side of the tumor near its base.

Dr. Mixer and I decided before beginning the operation to abandon it if the spinal cord occupied any part of the sac or if it contained any large nerves. On inspecting the interior of the tumor through the opening in the sac, it was found to be free from these important structures. The cleft in the vertebræ was quite small. A band of connective tissue passed from the apex of the tumor to its base. The operation was completed by making an incision similar to the first on the other side of the tumor. The elliptical opening in the skin was closed by interrupted silk sutures. The incision was so made that the edges of the wound were in exact coaptation, and would, after removal of the tumor, probably have remained so without the use of sutures. The sac was adherent to the skin and cellular tissue. A few adhesive straps were applied to prevent tension upon the sutures, and the dressing was completed by the application of a large compress of carbolized absorbent cotton, secured in position by a broad bandage around the body. A mixture of bromide of potassium and chloral was given to guard against a possible attack of convulsions. Twenty-four hours after the operation the child looked as well as it ever did. Every function seemed to be performed perfectly and continued so for forty-eight hours. Seventy-two hours after the operation it was noticed that a peculiar pallor had spread over the child's face, it refused to nurse, seemed restless, although apparently suffering no pain, and died soon afterward. The wound had almost completely united by first intention. Large quantities of cerebro-spinal fluid issued continually from the wound. A large compress or pad of absorbent cotton would be completely saturated in a few minutes. Indeed, while changing the dressing the fluid could be seen trickling from the wound.

Were we justified in performing the operation of excision? Let us see what some of the authorities say:

Holmes,[1] after speaking of the several methods of treating spina bifida, says: "There remains the operation of excising the sac. As several cases of successful excision are on record, it would, I think, be rash to proscribe the operation in a disease so fatal as spina bifida."

On page 841 of the same volume the indications for operative interference are succinctly stated as follows: "If the tumor can be tapped and the fluid drawn off without producing nervous symptoms; if there is no increased sensibility in the usual place of attachment of the cord; if the disease, though increasing, is not attended by convulsions; if the tumor is equable in transparency and consistence throughout; if, on tapping the tumor, the trocar can be passed into the centre of the sac without appearing to set up such symptoms as we expect from touching the cord—we may fairly act on the assumption that the cord is absent. In cases where it is suspected that the cord is present, no treatment should be adopted, except in express deference to the wishes of the child's parents and with a full knowledge on their part of the probability of a fatal result."

Our case was almost identical with the foregoing description. Again, on the same page, the author continues: "When the tumor refills as fast as it is emptied by the trocar, some other method must be

[1] Holmes's System of Surgery, vol. iii. page 842.

practised if the child's life is to be saved." This was true in our case. After each tapping the sac was speedily refilled.

Gross,[1] in speaking of the operation of ligation and excision, says: "Such procedures cannot be too pointedly condemned as being unscientific and certain to prove fatal."

We find this statement in the *International Encyclopædia of Surgery*,[2] in regard to the operation of excision of spina bifida: "The *modus operandi* is of little moment. If the sac contains cord elements the result will prove fatal; if not, success may possibly follow."

What caused the death of the child? It was neither due to shock nor to inflammation of the membranes of the cord. Was the loss of so large an amount of cerebro-spinal fluid, which plays an important part in the animal economy, a sufficient drain on the system to cause the fatal termination?

Gray[3] thus speaks of it: "The cerebro-spinal fluid fills up the subarachnoid space. It varies in quantity, being most abundant in old persons, and is quickly reproduced. Its chief use is probably to afford mechanical protection to the nervous centres and to prevent the effects of concussions communicated from without."

Ranney[4] says: "The functions of this fluid are to equalize the pressure within the brain, when the amount of blood in that organ suffers variation, as in the respiratory act."

The first day or two after the operation, while success seemed probable, I decided to report the case. After the operation proved a failure I almost decided not to report it; but after considering all the features of the case, it occurred to me that our failures are sometimes nearly as instructive as our successes. I have as yet been unable to find statistics giving the mortality of this operation.

I operated upon this case because the parents of the child had become tired of palliative treatment and desired to have a curative measure adopted. I consented to report this case because of the frequency of this congenital defect and the dearth of literature upon the subject.

[1] Gross's System of Surgery, vol. ii. page 212.
[2] Vol. iv. page 900. [3] Gray's Anatomy.
[4] Medical Anatomy, page 222.

THE PATHOLOGICAL ANATOMY OF TIC DOULOUREUX.

BY CHARLES L. DANA, M.D.,
PROFESSOR OF NERVOUS DISEASES IN THE N. Y. POST-GRADUATE MEDICAL SCHOOL, AND IN DARTMOUTH MEDICAL COLLEGE.

INVETERATE trigeminal neuralgia has been caused by local disease, such as a bony tumor, or aneurism, or syphilitic exudation.

The ordinary cases of tic douloureux, however, occurring after middle life, affecting usually and chiefly the second branch of the trigeminus, are not due to such causes. Little is known of its pathological anatomy, it being generally believed that there is no especial change in the nerve or its centres, and that the disease is a neurosis.

Anstie was of the opinion that this, like other chronic neuralgias, was due to an atrophic change in the sensory ganglia. Dr. de Schweinitz has reported one case, in which he found evidence of some degenerative inflammation in the nerve.[1]

Recently the Gasserian ganglion removed in a case of tic, was found to show evidence of degenerative atrophy.

But it may be stated confidently that neuritis and degenerative changes in the nerve are not the usual and ordinary conditions in tic douloureux, for in almost all cases, no matter how old, no permanent anæsthesia occurs. On the other hand, in cases of progressive trigeminal anæsthesia due to degenerative neuritis which I have seen, there is little pain. Nor should we expect a slow parenchymatous degeneration to cause great sensory disturbance.

The question arises, therefore, whether there is any tangible cause of the condition.

My proposition is, that many cases at least are due to an obliterating arteritis of the nutrient vessels of the nerves. My reasons for this are these:

1. The disease occurs at a time of life when degenerative changes in the arteries begin.

2. It affects chiefly and primarily a nerve supplied by one of the terminal branches of the internal maxillary, itself a branch of the external carotid. If it extends, or recurs, it involves a nerve nourished by the inferior dental, also a branch of the external carotid. It rarely affects seriously the supra-orbital nerve, which is supplied by a branch of the internal carotid. Hence the disease follows a certain fixed vascular distribution.

3. I have examined five superior maxillary nerves removed in typical cases of tic douloureux. In none was there any noteworthy change in the nerves.

In three of them striking evidence of arterial disease was found. In the fourth and fifth cases no bloodvessel was present in the specimens.

4. The view that an obliterating arteritis is a factor in this disease is strengthened by therapeutic experience. Nitroglycerin will sometimes relieve pains instantly, and for a long period of time. Aconite, which is so useful in this disease, also lowers blood-tension; while potassium iodide, which sometimes favorably modifies the arterial disease, is occasionally useful in tic.

5. There is unquestionable evidence that removal of the peripheral nerves sometimes cures tic en-

[1] THE MEDICAL NEWS, July 19, 1884.

tirely, and hence that the disease is peripheral, and due to some local peripheral irritation.

6. MM. Quenan and Lepars have recently stated that by a new method of injection they have been able to discover a closer and more extensive relationship between the nerve-trunks and bloodvessels than has heretofore been known, and they suggest in their conclusion that disturbances in blood-supply may be a serious factor in causing neuralgia. The details of their paper are not yet accessible.

My argument stands in this position, therefore:

I adduce positive facts that the trigeminus and its roots, and even nuclei and deep roots, are not diseased, even in old and typical cases.

In all cases where the *vessels* were examined striking disease was found to be present.

Circumstantial evidence is furnished by therapeutic experiment, and by the general etiology and anatomical distribution of the vessels and of the pains.

My argument is necessarily deficient in numbers of cases. If someone finds a superior maxillary nerve, from a case of tic, with a perfectly healthy infra-orbital artery, the case would be weakened.

I believe, however, that such a case, if it occurred, would be of an unusual type.

At present it seems to me that it would be pretty safe for me to assert that a good many of the typical cases of tic douloureux occurring after middle life (and almost all such cases do occur then) are due to an obliterating arteritis of an infra-orbital or inferior dental artery (terminal branches of the external carotid), plus some peculiar vulnerability of the central venous system.

The experience of surgeons in treating tic douloureux by ligaturing the common carotid, shows that pain in the inferior dental branch is affected favorably by this operation, pain in the superior maxillary is affected very little, and pain in the infra-orbital not at all. Possibly ligature of the external carotid may be all that is indicated surgically, for this artery supplies the second and third branches of the trigeminus. I would not expect ligature of the internal carotid to do any good.

The following is a summary of my cases:

Fig. 1.

The argument is defective in that I have not examined the infra-orbital arteries of healthy persons of from forty to sixty years of age. But this is not much of a defect, for the reason that with obliterating arteritis there must, I would admit, be some specific vulnerability of the nerve-centres.

CASE I.—Male, aged sixty-five years, a gardener; a patient of Dr. Robert Abbe's, to whom I am indebted for the nerve. The disease had lasted for four years; no alcoholic or syphilitic history. Pain involved the right superior maxillary nerve, especially the dental and infra-orbital branches.

The nerve was removed two years ago along with the infra-orbital artery as far back as the spheno-maxillary fossa, with the result of curing the case. The central end of the removed nerve was examined by me microscopically. The nerve-fibres were found but slightly affected. The artery, however, showed an extraordinary degree of inflammatory thickening (see Fig. 1). The muscular coat seems unusually thick, as though there was hypertrophy of the muscular fibre. There is a great deal of connective-tissue proliferation and thickening of the external coat. The intima also shows degenerative changes in its cellular constituents.

CASE II.—Michael D. (case of the late Dr. James K. Wood, reported by Dr. Dennis). Disease had lasted five years; no history of alcoholism or syphilis. Pain located in the left superior maxillary nerve. Nerve removed in 1873. Pain recurred in inferior maxillary. Death from opium habit, in 1877. Examination of the intra-cranial portion of the trigeminus by Dr. William Welch showed no evidence of disease, either in the nerve-root or in its nucleus or deep origin. On examination of the superior maxillary nerve by myself, there was found a great deal of fatty tissue about the fibres, and in this are *diseased bloodvessels*.

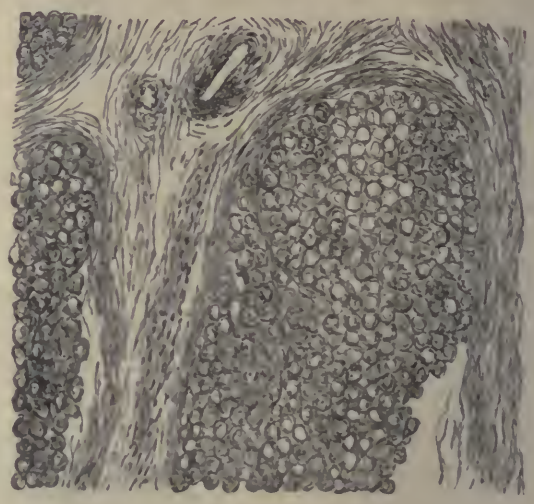
The nerve-fibres have undergone complete degeneration, and appear as broken, swollen tubes of myelin without a trace of axis-cylinders. The change is probably a post-mortem one, however, as the nerve has been kept in alcohol for nearly twenty years.

CASE III.—Emma B. (case of Dr. Wood's, reported by Dr. Dennis). Disease had lasted several years (no details given). Superior maxillary nerve removed by Dr. Wood. Recurrence of pains in the inferior maxillary nine months later. Examination of nerve by myself. No bloodvessel in field. The nerve shows nothing but a slight increase in its connective-tissue support. A few fibres have apparently undergone degeneration.

CASE IV.—Joseph J. (case of Dr. Wood, reported by Dr. Dennis), aged forty-two years; no history of syphilis or alcoholism. Has had malaria. Supra-maxillary neuralgia for several years. Operation and cure (for two years, at least). The supra-maxillary nerve, examined by myself, showed increase of interstitial tissue, with numerous tortuous capillaries in it whose walls are thickened. Small arterial vessels, with greatly thickened walls, due to increase of external and also of muscular coat. The intima also shows disease atheromatous in kind. Nerve fasciculi showed a slight increase in peri- and endo-neurium; occasionally a Deiter's cell among the fibres. Nerve-fibres not affected.

CASE V.—William S. R. T., male, aged fifty years, from Scotland, telegraph operator. Family history of tic douloureux. Had suffered from malaria, but not from syphilis. Not intemperate. Infra-orbital neuralgia for ten years. Had tried drugs of all kinds, and had had two operations at infra-orbital foramen. Operation by Prof. James K. Wood, in 1873. Patient was free from pain in 1876. The examination of the nerve by myself

FIG. 2.



showed a slight degree of degeneration of nerve-fibres. The picture presented is a good deal like that figured by Drs. Mears and De Schweinitz[1] in a section of the inferior dental nerve removed for trigeminal neuralgia. The change is not nearly so marked, however, and may be in part post-mortem.

TWO CASES OF CEPHALIC VERSION IN SHOULDER PRESENTATION.

BY C. S. HOFFMAN, M.D.,
OF KEYSER, WEST VIRGINIA.

MY object in publishing these cases is not on account of the mal-presentation of the children, but on account of the ease by which the cases were transformed into head presentations and delivered.

The first case I made no record of, but I distinctly remember the circumstances, although it occurred a few years ago.

A lady who was the mother of two well-developed children, and who had had easy labors previously, was taken in confinement at 4 o'clock in the morning, when she sent for a midwife whom she had engaged to attend her. The midwife arrived a few minutes after being called, and remained with her all the time. I was called in to see the case at 1 P. M., when I was told by the midwife that the labor was, as she thought, proceeding naturally, but very slowly for the amount of pain the woman was having. At about noon the waters broke, and what was thought to be the foot of a child appeared. Concluding something must be wrong, she had sent for me. The woman had now been in labor nine

[1] THE MEDICAL NEWS, July 19, 1884.

hours, during which time the waters had ruptured, while the foot of the child had been protruding for about one hour. On making an examination I found the left arm of the child protruding from the vulva; the left shoulder well down below the brim of the pelvis; the head in the right iliac fossa. The woman's pelvis was roomy, and the os well dilated. The pains were very strong, especially when I made any attempt to change the position of the child. I at once administered chloroform, and while the midwife continued its administration I folded the forearm of the child upon the arm and easily returned it into the womb. I then passed my hand over its head, and brought this down to the brim of the pelvis, converting the presentation of the child into a vertex presentation of second position. I then applied forceps to the head, and in less than ten minutes from the time my patient was fully under chloroform the head was well down in the pelvis. The balance of the delivery was easy and natural. The child was above the average in size, and as vigorous as could be desired.

My other case occurred a few days ago:

A negress, about twenty-five to thirty years of age, short and very stoutly built, and the mother of three children, all of whom were born alive, though she says her labors have always been tedious and hard. This time she was taken in labor Saturday evening, February 7th, it being the full period of her gestation. She was in active labor all Saturday night and all day Sunday. Sunday evening at about 7 P. M. she noticed something protruding from her vulva, which she discovered to be the arm of the child. The labor continued all Sunday night, and on Monday morning her husband came for me, telling me the history of the case as related. As she lived some distance from town, and not knowing what assistance might be required, I asked Dr. Workman to accompany me. We were unable to get to the woman until about 11 A. M., February 9th, making the period during which she had been in labor over forty hours. We found, as had been represented, an arm protruding. A loop of the umbilical cord was down in the vagina, œdematous and non-pulsating. The right arm and right shoulder were impacted well down in the pelvis. The head was in the right iliac fossa. The child was dead. The woman's pelvis was as roomy as could be expected in a short, stout person. The os was well dilated. The amniotic fluid was well drained off, and the womb tightly contracted. The woman was considerably exhausted. We gave her a couple of ounces of whiskey, and then Dr. Workman administered chloroform. Considering the long time the woman had been in labor, and the tightly contracted condition of the womb, it was a difficult undertaking to turn and deliver by the feet.

Remembering my experience with the case I have just related, I determined first to try to return the arm into the womb, by grasping the head, and bringing it down to a head presentation. Failing in this, I determined next to try to turn and deliver by the feet. If this should fail I had no other resort but embryotomy. As soon as she was fully under chloroform I folded the forearm of the child upon its arm, and then by steady but careful pressure and manipulation succeeded in slightly elevating the shoulder and carrying the arm into the womb. I then passed my hand up over the head, and brought it down into the pelvis, at once applied my forceps, and delivered the woman. In less than three-quarters of an hour from the time we arrived at her house the woman was delivered. Ten days after, the husband told me his wife was well and out of bed.

I am satisfied from the manner in which the womb was contracted down on the child that to turn would have been a very difficult if not an impossible operation. The child was of average size.

It is surprising to me in these cases with what ease the head was rotated after the arm was returned. The ease by which these deliveries were accomlished is to be seen by the short time occupied in performing them.

ORIGINAL ADDRESS.

THE CAUSATION OF DIPHTHERIA.[1]

By WILLIAM H. WELCH, M.D.,
PROFESSOR OF PATHOLOGY, JOHNS HOPKINS UNIVERSITY.

The subject which I have selected for this address is so largely a topic of the day, and fills at present so much space in medical journals, that the main facts which will be here presented must appear familiar to those who have followed recent medical literature. Nevertheless, many of these facts are so new and so important, and the disease to which they relate is one of such great interest, that no apology is needed for bringing before you a brief summary of the recent investigations concerning the causation of diphtheria, and the light which these discoveries have shed upon our knowledge of the pathology, prophylaxis and treatment of a disease more dreaded, and justly so, than any other infectious disease always present among us. Although these new discoveries are mainly the results of bacteriological work, it will be my purpose to dwell not so much upon minute bacteriological descriptions, more suitable to the laboratory and to special articles than to a general address of this kind, but rather upon those points which illustrate the application of these discoveries to a fuller and more correct knowledge of the nature, etiology, pathology, diagnosis, prevention, and treatment of diphtheria.

The history of our knowledge of diphtheria illustrates the difficulties which we encounter in endeavoring to reach a full understanding of a disease upon the basis of its symptomatology and pathological anatomy alone. Consider for a moment what are some of the uncertain and still much disputed questions concerning this disease.

Is diphtheria primarily local or constitutional in its

[1] The annual address before the Medical and Chirurgical State Faculty of Maryland, at its ninety-third annual session, held in Baltimore, April, 1891.

origin? Are all pseudo-membranous inflammations of the throat, not directly referable to caustic irritants, diphtheria? Is there a purely local, non-contagious pseudo-membranous laryngitis called croup distinguishable from diphtheria? Are the pseudo-membranous anginas secondary to scarlatina, and less frequently to measles and some other infectious diseases identical with diphtheria? Is there any relation between follicular tonsillitis and diphtheria? May diphtheria occur in a mild form as a simple catarrhal inflammation of the throat? Are pneumonia, acute nephritis, suppuration of the glands in the neck, etc., referable to the direct action of the diphtheritic virus; in other words, what lesions belong to the disease and what are complications? Shall reliance be placed chiefly upon local or upon general treatment?

These are some of the questions which the most careful study of the clinical history and of the anatomy of diphtheria has not been able to answer clearly and unmistakably. Nor are these matters only of theoretical importance. Referring to the two doctrines of the local and of the constitutional nature of diphtheria, Dr. J. Lewis Smith, one of the most painstaking and profound investigators of this subject in this country, says: "It is a matter of great importance—an importance transcending that of almost any other subject relating to the pathology of this dreadful scourge—that we should ascertain clearly and certainly which of the two prevailing theories is true, since the theory influences practice."

I hope to be able to show in the course of this address that this question, as well as others mentioned, have now been answered "clearly and certainly," and that we are in a position to solve other of the problems still remaining in doubt. All of this gratifying widening and deepening of our knowledge has come from the discovery of the microscopic germ which is the specific cause of diphtheria, and from the study of the singular and interesting properties of this germ. There is, perhaps, no other disease, with the exception of tuberculosis, upon which greater light has been shed by the discovery of its specific cause than upon diphtheria.

Permit me to present to you, in the first place, the evidence that the so-called Klebs-Löffler bacillus is really the specific agent of infection in diphtheria; and then to describe the most important properties of this microorganism, so far as they bear upon the subject of this address.

There are three things especially which have rendered difficult the convincing demonstration that a given microörganism is the specific cause of diphtheria.

The first is the uncertainty as to what shall be called diphtheria, and the possibility that included under this name are various affections which may be due to different causes. Hence it might happen that one investigator studying one class of cases—for instance, the pseudo-membranous anginas associated with scarlet fever, measles, etc.—might obtain results different from another who observed another class of cases. In view of this uncertainty, it is clear that conclusions as to the causation of primary diphtheria should be derived from the investigation of cases which all are agreed in regarding as genuine primary diphtheria. When the etiology of this undoubted class of cases has been determined, we are in a position to examine whether the secondary and other doubtful forms of diphtheria have a different causation or not.

A second difficulty has been not in the demonstration of microörganisms in diphtheria, but rather in the abundance of bacteria present in diphtheritic membranes. Of the various species of bacteria found in the false membranes of diphtheria, we must determine which are constantly present and which are inconstant. If we find one species always present in large number and absent in other conditions, the presumption is that this is the specific cause of the disease, and this presumption becomes a certainty if we are able to reproduce experimentally, by inoculation with pure cultures of this germ, a disease in all respects identical with human diphtheria.

Just here we meet the third difficulty, which consists in bringing positive evidence that our experimental disease is in reality identical with human diphtheria. We are accustomed to regard the fibrinous pseudo-membrane on the mucous membrane of the tonsils, pharynx, and air-passages as the most certain anatomical criterion of diphtheria, but we have long known that it is possible to produce experimentally in animals, by a variety of agencies which have nothing to do with diphtheria, false membranes histologically identical with the diphtheritic membrane. Hence the mere production of a false membrane by the inoculation of a germ suspected to be the cause of diphtheria, although it constitutes weighty evidence, cannot be considered absolutely conclusive that such germ is really the cause of diphtheria. But are there not other anatomical changes in the body characteristic of diphtheria beside the diphtheritic membrane? We owe especially to Oertel the demonstration of the fact that the diphtheritic virus is a most peculiar poison to the cells of the human body, and that it produces areas of cell death not only on the surface of mucous membranes, but also in deeper parts, in various lymphatic glands at a distance from the local lesion and in the spleen. These changes can be demonstrated by histological examination. Now, if we find that our suspected germ, beside causing pseudo-membranous inflammations, produces identical foci of cell death; if we find that it injures the kidneys, as we have long known it does in human beings; and if we find that it causes late muscular paralyses resembling the post-diphtheritic paralyses which the clinician regards as of such diagnostic value in doubtful cases of sore-throat, then we shall have evidence strong indeed that this germ is the real specific cause of diphtheria.

It is not surprising that all of these difficulties were not overcome in the first important publications of Klebs in 1883, and of Löffler in 1884. We owe to Löffler the first bacteriological study of diphtheria by the modern culture methods. Although his work was most valuable and accurate, he was compelled to express himself reservedly as to the significance of the bacillus which we now believe to be the cause of diphtheria. No such complete chain of proof was brought forward as Koch presented in his first memorable publication upon the tubercle bacillus two years previously. Hence it came about that the Klebs-Löffler bacillus from the first assumed a doubtful status, and that even to-day it is often referred to in writings on diphtheria as only one among many claimants to be regarded as the cause of diphtheria.

I shall not weary you by following the historical path in which obstacle after obstacle has been removed which stood in the way of the full recognition of the Löffler bacillus as the infectious agent of diphtheria, but I shall simply direct you to the goal which has been reached.

It is now established that this bacillus is constantly present in large number in the pseudo-membranes of all cases of primary diphtheria, and that no other species of bacteria is constantly to be found in this situation. The expectation expressed a year ago by Löffler that the results on this point would not be found to be different in this country from those in Europe has been fulfilled by the bacteriological examination by Dr. Abbott and myself of a series of cases of primary diphtheria occurring in Baltimore city, in all of which we found the Löffler bacillus as the only constant organism, as well as by the latest publication of Dr. Prudden. The occurrence of a bacillus, with all of the properties of the virulent diphtheritic bacillus, in persons not affected with diphtheria is so extremely exceptional that Löffler, notwithstanding years of searching, has been able to find it only once under such circumstances.

The Löffler bacillus can be readily obtained in pure cultivation on artificial media and its properties studied outside of the body. The sum of these properties suffices for its positive and ready identification.

Inoculation of pure cultures of this bacillus is found to be pathogenic for guinea-pigs, cats, pigeons, rabbits, and some other animals. By such inoculation a disease can be reproduced identical in all essential features with human diphtheria, and there is no other species of microörganism known capable of reproducing all of these features. In suitable animals we can cause by inoculating them with the diphtheritic bacillus pseudo-membranous inflammations of mucous membranes indistinguishable from those of natural diphtheria, swelling of adjacent lymphatic glands, multiple ecchymoses, serous transudations, fatty degeneration, and other lesions in the kidney and liver, late muscular paralyses, and foci of cell-death like those in human diphtheria. Upon this last point the investigations in full have not yet been published, but researches have for some time been directed in the pathological laboratory of the Johns Hopkins University, to the detection of areas of cell-death in the internal organs of the animals inoculated with diphtheria, and I may say here that we have been able to confirm and extend in animals Oertel's researches on this subject in human beings.

By the labors, therefore, of many investigators since Löffler's first publication in 1884, including those of Löffler himself, all of the conditions have been fulfilled for diphtheria which are necessary to the most rigid proof of the dependence of an infectious disease upon a given microörganism, viz: the constant presence of this organism in the lesions of the disease, the isolation of the organism in pure culture, the reproduction of the disease by inoculation of pure cultures, and similar distribution of the organism in the experimental and in the natural disease. We are then justified in calling the Klebs-Löffler bacillus, the bacillus diphtheriæ.

Let us now turn our attention to the most important properties of this bacillus. However great may be the scientific interest of the discovery of the specific germ of an infectious disease, this discovery by itself is after all only the realization of the faith of enlightened physicians, that the infectious diseases are all caused by specific living organisms. The practitioner is fully justified in inquiring how this discovery helps him to a better understanding of the disease, to a more certain diagnosis, to a more accurate interpretation of symptoms, to more effective measures of prevention and of treatment. Although these expectations have been met only in part, enough has been accomplished already to show that great practical value has come and is likely to come in still larger measure from the discovery of the bacillus diphtheriæ.

The specific germ of diphtheria is a bacillus, devoid of independent motility, averaging in length about that of the tubercle bacillus. It presents itself both in diphtheritic membranes and in cultures, often in such bizarre forms that these belong to its most characteristic morphological properties. It grows upon our ordinary culture media, best upon Löffler's blood-serum and bouillon mixture, but it will grow even upon steamed potato. As bearing upon a possible source of infection it is important to note that the bacillus will multiply readily in milk. It does not multiply or it does so only very sluggishly at a temperature below 18° C. (about 64° F.). It is killed by exposure for ten minutes to a temperature of 58° C. (136.4° F.). It is not necessary to describe here in detail the peculiarities of its growth upon the various culture media, although to the bacteriologist these are the guides for the isolation of the bacillus in pure culture. The series of cultures which I here exhibit to you illustrate the characteristic appearances. It suffices here to draw the conclusion that, unlike the tubercle bacillus, the bacillus of diphtheria may readily find conditions outside of the body suitable for its multiplication.

But, as is well known, it is not necessary that an infectious organism should actually propagate itself outside of the body in order to produce ectogenic infection. Such infection may occur if the organism simply preserves its vitality. On this point we know that the diphtheritic bacillus, although it forms no spores, is among the more resistant bacilli of the non-spore-forming class, withstanding for a long time drying and other influences injurious to the less resistant forms. The specific bacilli have been obtained in cultures made from diphtheritic membranes preserved dry in a piece of linen cloth for five months. This property is in harmony with the experience that rooms, clothing, and other objects may retain for months the diphtheritic virus in an active state. As the diphtheritic bacilli may live for a still longer period in the moist state, and as moist, damp dwellings have long been held to be particularly favorable for the development of diphtheria, it is probable that statements as to the preservation of the diphtheritic virus in such situations for a year or more are not without foundation.

Of capital importance is the establishment of the fact that the diphtheritic bacillus develops only locally at the site of infection, and does not invade the tissues or the circulation. It is found only in the diphtheritic pseudo-membrane, and not even in the subjacent mucous membrane. Indeed, it is only the superficial parts of the false membranes which contain the bacilli. The determination of this fact gives at once a clear and decisive answer to the long-mooted question as to the primarily

local or constitutional nature of diphtheria. Diphtheria is, without a doubt, local in its origin. The germ which causes this disease not only makes its first appearance and multiplies where the pseudo-membrane is formed, but it does not even subsequently invade the blood and organs. As we shall see later, the constitutional symptoms are due to the reception of a chemical substance or substances of remarkable toxic properties, produced by the local development of the diphtheritic bacillus. This settlement of the controversy as to the local or the constitutional origin of diphtheria is one of the most important outcomes of the bacteriological study of this affection, for the question pertains to a fundamental point in our conception of the disease. Nevertheless, from the point of view from which this controversy has usually been waged, the triumph is, in my opinion, only a partial one for the localists, for, as will be shown later, I believe that there are reasons as strong as ever for the employment of constitutional measures of treatment in combination with the local ones.

From what has already been said, we are prepared to consider for a moment in what ways a person affected with diphtheria becomes a source of danger to those around him, and to the locality. The diphtheritic bacilli are conveyed from the body in particles of diphtheritic exudation, saliva, and other secretions discharged through the mouth and nose. (It is not necessary to consider here the comparatively exceptional localizations of the disease.) In this way the infectious substance may readily become attached to the person and clothing of the patient, and of those around him, as well as to the bedding, furniture, floor and walls of the room, dishes, and other objects. Notwithstanding the statements current in nearly all text-books, there is no evidence that the breath of the patient contains the diphtheritic germ, except as bits of false membrane or secretion may be mechanically expelled in the act of coughing, hawking, or sneezing. It has been proven experimentally that the expired air is incapable, during ordinary respiration, of detaching bacteria from the moist mucous surfaces over which it passes. The specific germs are not so readily conveyed by air-currents from a diphtheritic patient to those near him, as they are, for instance, from a patient with scarlet fever, in which the germs are in all probability thrown off from the surface of the body on light epidermal scales. Nor are the chances of infection of the sources of supply of drinking-water with the diphtheritic bacillus so great as is the case with such diseases as cholera and typhoid fever, in which the stools contain in large number the specific bacteria, and are likely to be disposed of in such a way that under bad sanitary conditions these bacteria may find their way into wells and streams. While there are some accounts intended to show the conveyance of the diphtheritic virus through the drinking-water, we do not hear much of this as a source of infection, and it is not likely that it plays an important *rôle*, although it is probable that the diphtheritic bacillus may sometimes be discharged by the stools.

Diphtheria is one of the infectious diseases the germs of which may be taken into the body by the inspired air. Inasmuch as bacteria cannot, under ordinary conditions, occur as floating matter in the atmosphere until they have been completely dried down so that air-currents can detach as dust the little particles to which they adhere, it is evident that only those infectious germs are likely to be conveyed by the air which are not destroyed by complete drying. As has already been mentioned, the diphtheritic bacillus withstands for months desiccation which is so injurious to the cholera vibrio and to many other species of bacteria. While, therefore, we must admit that air-infection with the diphtheritic bacillus is a real and conspicuous danger, it is well to bear in mind that modern bacteriology has taught us the great lesson that the most frequent and important mode of infection is by contact with infected substances. When we consider the manifold ways in which the diphtheritic bacilli may be widely distributed, and when we consider the habit of young children—who are the most numerous victims of the disease—of handling everything and of putting everything into their mouths, we are led to appreciate that infection by contact must play the leading part in the transmission of diphtheria.

I will now ask your attention to a brief consideration of the most deadly of all the properties of the bacillus diphtheriæ, namely, the power of producing extraordinarily poisonous chemical substances. That the grave constitutional symptoms of diphtheria are referable to such substances has long been surmised, and as soon as it was found that the bacilli causing diphtheria develop only locally it became certain that toxic substances must be formed. The results of the investigations as to the nature and properties of these substances are not only most important for the etiology of diphtheria, but are among the most significant acquisitions of bacteriology in recent years. We owe these results chiefly to the researches of Roux and Yersin and of Brieger and Fränkel.

If bouillon cultures, four or five weeks old, of the diphtheritic bacillus—preferably containing some blood-serum—be sterilized by heating them at temperatures of about 55° C., or if they be deprived of bacteria by filtration through a Chamberland porcelain filter, it is found that the sterilized culture fluid possesses highly poisonous properties when injected, even in small quantity, into animals. The toxic substance is not of a crystallizable, alkaloidal nature of the kind known as a ptomaine or a toxine, for no such substance can be detected in these cultures. The poisonous material, although it has not been separated in a condition of absolute purity, has been shown to be probably of a proteid nature. It is precipitated by alcohol and by saturation with ammonium sulphate and sodium phosphate. It is mechanically dragged down by fine precipitates, such as those of calcium phosphate. It is soluble in water. Obtained in a state approaching purity it appears as a white, amorphous mass of light specific gravity. In the moist state it loses, in great part or entirely, its poisonous properties when subjected to heat above 60° C., but when dry it stands temperatures of 70° C. It is not volatile, and can be preserved for months at least in the dry state without loss of its characteristic properties.

Some idea of the extraordinarily poisonous nature of this substance can be obtained from the statement of Roux and Yersin, that four-tenths of a milligramme of the substance (after deducting the weight of the ashes and of the non-poisonous part insoluble in alcohol) obtained by evaporating to dryness the active culture fluid,

is sufficient to kill at least eight guinea-pigs, weighing each four hundred grammes, or two rabbits, weighing each three kilogrammes. As the major part of these four-tenths of a milligramme is represented by other substances than the diphtheritic poison, it is apparent that the poison must be of appalling potency.

If this poison, or the sterilized culture fluid containing it, be injected into a guinea-pig or rabbit or other susceptible animal, it is found to be capable of producing all of the changes in the body which follows the inoculation of pure cultures of the diphtheritic bacilli, with the exception of the pseudo-membrane. For the production of this membrane the bacilli are necessary, but the other lesions, such as the local œdema after subcutaneous injections, the ecchymoses, the serous transudations, the changes in the kidney, liver, and other parts are observed after the injection of the toxic albumin, as the diphtheritic poison is sometimes called, as well as after inoculation with the bacilli. If the animals live sufficiently long muscular paralyses may develop.

The most remarkable property of this toxic albuminoid substance, or these substances (for we do not know positively that there is only one such substance), is that when injected in a single sufficiently small, but fatal, dose, it may produce no apparent disturbance for days, and the death of the animal may occur many days, or even weeks, or months after the injection. This is a quality which we have not been accustomed to attribute to chemical poisons, and it is evidently one of the greatest practical significance. If it is true that the diphtheritic bacilli are capable of producing at the site of their local development poisonous substances which, when at first received into the system, may cause no manifest harm, but which may destroy life perhaps after days, then it is clear that even if we succeed in killing the bacilli in the pseudo-membrane, the individual may still die of toxæmia.

That the bacilli of diphtheria may produce apparently identical toxic proteids in the animal body has been demonstrated. These poisonous proteids are probably allied in their constitution to the poisonous substances found by Weir Mitchell and Reichert in the venom of rattlesnakes and of other serpents, and belong to a group of interesting chemical products now known to be produced by various pathogenic bacteria and other organisms, and which have been and are still being carefully studied, among others, with especial success by Sydney Martin and by Hankin in England. While there is reason to believe that the diphtheritic poison is a proteid this view cannot be regarded as established until the poison has been isolated in a state of purity. As we know that the poison can be mechanically dragged down by fine precipitates, it is possible that it is intimately united to the precipitates of albuminose without being itself an albuminose. Interesting as it might be to tarry longer at this point, we cannot complete this outline sketch of the properties of the diphtheritic bacilli without the consideration of certain other important characteristics which they possess, and time admonishes us to hasten on.

It is well known that the character of the symptoms, and especially their gravity, vary in a marked degree not only in different cases of diphtheria, but also in different epidemics. There are epidemics of a mild character, and there are epidemics, such as some of those of recent years in the northwestern part of this country, which sweep away nearly all the children of a neighborhood or a town. In estimating the value of different methods of treatment, this is a point not always kept sufficiently in view. The question suggests itself whether there is anything known concerning the attributes of the bacillus diphtheriæ which will explain these differences.

As to this point, it is to be said that this bacillus, as obtained in pure culture from different cases of diphtheria, varies in its virulence, as tested upon animals, to a greater degree than any known pathogenic organism. Diphtheritic bacilli isolated from different cases of diphtheria, will sometimes kill guinea-pigs by subcutaneous inoculation in twenty-four hours; in other cases they require two, three, four, even nine, days to accomplish this result. From two cases of diphtheria of slight severity recently examined at the Johns Hopkins Hospital, Dr. Abbott obtained in pure culture a bacillus identical in its morphology and its behavior on culture media with the diphtheritic bacillus, but incapable of killing guinea-pigs by subcutaneous inoculation. In this respect it resembles the so-called pseudo-diphtheritic bacillus, but it differs from this organism in having been present in the diphtheritic exudate in large number. While observations are as yet insufficient to justify a positive statement, there seems to be a general correspondence between the virulence of the bacilli and the gravity of the case in which they are found, but there are exceptions to this. It is interesting to note that as a case progresses toward recovery a tendency has sometimes been observed toward a diminution in the virulence of the bacilli. It has been demonstrated that the less virulent the bacillus, the smaller is the amount of the toxic proteid which it is capable of producing in cultures, this substance being replaced, according to Fränkel and Brieger, by another albuminoid product devoid of toxic properties. While other factors may be, and doubtless are, concerned in determining the severity of a case of diphtheria, it is evident that the demonstrated variability in virulence of the diphtheritic bacillus affords an explanation of many of the differences observed in the onset and decline of an outbreak of diphtheria and in different epidemics of this disease. The existence of an attenuated variety of the diphtheritic bacillus, which may under circumstances which we do not now understand, acquire virulence, is unquestionably of great significance in the epidemiology of diphtheria.

Roux and Yersin have brought forward a number of reasons for regarding the so-called pseudo-diphtheritic bacillus (that is a bacillus resembling, if not absolutely identical with, the diphtheritic bacillus, in its morphology and its behavior on culture media, but incapable of killing animals) as an attenuated form of the bacillus diphtheriæ. In the two cases of apparent diphtheria referred to, in which a bacillus, which we could not distinguish from the ordinary diphtheritic bacillus, save by absence of pathogenic properties when inoculated into guinea-pigs, there was a thin, grayish, pseudo-membranous deposit on the tonsils, and the symptoms were of a mild character. The bacilli were present in large number and were mingled in each case with a large number of the

golden pyogenic staphylococci. It would be interesting to determine whether the virulence of the diphtheritic bacilli may be modified by the presence of other bacteria. Whether or not we are justified in regarding the two cases of pseudo-membranous angina referred to as genuine diphtheria cannot be decided until the status of the pseudo-diphtheritic bacillus is settled.

I wish now to say a few words concerning the diagnostic value of the bacillus of diphtheria, and this will afford a convenient opportunity of touching also upon the existence of very mild cases of diphtheria and upon pseudo-membranous anginas, which are not due to the diphtheritic bacillus.

While typical cases of diphtheria, especially when occurring during an epidemic, offer no especial difficulties in diagnosis, every practitioner of experience will admit that cases occur often enough which he does not know whether to call diphtheria or not. If the case is a mild one, with whitish patches on the tonsils or pharynx, which soon disappear, and constitutional symptoms are slight, he does not generally venture to make a diagnosis of diphtheria. Still the diagnosis in just this class of cases is of great importance, for such a case may be a dangerous source of infection to others.

Now we possess in the detection of the Klebs-Löffler bacillus a positive means of diagnosis of diphtheria, and it is to be considered how far this means is available to the general practitioner. The bacteriological method of diagnosis involves, first, the microscopical examination, with an oil-immersion objective, of properly stained cover-glass specimens of the suspected inflammatory exudation; second, the preparation and study of cultures from this exudation made upon suitable media, preferably Löffler's blood-serum and bouillon mixture; and third, in some cases the inoculation of a guinea-pig with the pure culture. In many cases the mere microscopical examination of cover-slip preparations from the exudation will suffice, but the diphtheritic bacillus cannot be identified in this way so positively as the tubercle bacillus, for instance; and in just the class of cases where doubt as to the diagnosis is likely to exist, this procedure is most apt to prove insufficient. The examination of the cultures can be made the day following their preparation, and in nearly all cases this will afford a positive answer. The preparation of the cultures requires some training in bacteriological methods, and also a modest outfit of bacteriological apparatus. To a person thus equipped the examination offers no especial difficulties. Now, although Roux and Yersin have attempted to popularize the method, and have urged its general adoption by medical practitioners, I do not think that under existing circumstances it is likely to be widely applied in general practice. The method can be readily employed in hospitals and children's asylums, where it is calculated to be of great service, and in most large cities probably some one will be found who can be called upon to conduct such examinations. As the importance of practical training in bacteriology becomes more widely recognized in medical teaching, a larger number will enter upon the practice of their profession prepared to employ bacteriological methods of diagnosis.

The diphtheritic bacillus has been found in a number of cases of inflammation of the tonsils and pharynx in which the exudation and the symptoms were not sufficiently characteristic to permit a positive diagnosis in any other way than by the recognition of the specific bacillus. We do not possess sufficient information to be able to say how frequent these cases, which are generally of a very mild character, are, or how they can be diagnosticated by a merely clinical or anatomical examination. That they are not infrequent during the epidemic prevalence of diphtheria seems probable from clinical experience.

The view which has been widely advocated, that most cases of so-called follicular tonsillitis, which, as is well known, may prevail as an epidemic and may present marked but not dangerous constitutional symptoms, is a form of diphtheria not supported by bacteriological examination. In these cases the diphtheritic bacillus is usually absent, but under the rather vague name of follicular tonsillitis are doubtless included some cases of genuine mild diphtheria.

Not all pseudo-membranous inflammations of the throat are caused by the specific bacillus of diphtheria. It has been demonstrated by Wurtz and Bourges that this bacillus is absent, and that a streptococcus is present in nearly all cases of pseudo-membranous angina developing in the early stages of scarlatina, so that most cases of so-called scarlatinal diphtheria are not diphtheria at all, if we limit, as seems best, the term diphtheria to the affection caused by the Löffler bacillus. The Löffler bacillus is, however, present in the diphtheria appearing in the late stages of scarlatina and during convalescence, and it seems that scarlet fever is a predisposing cause of the development of genuine diphtheria.

In a series of cases, numbering 24, of pseudo-membranous inflammations of the tonsils, pharynx, and larynx, designated at the time as diphtheria, Dr. Prudden found in all but two a streptococcus, and in none the Löffler bacillus. These cases were, for the most part, either secondary to scarlatina, measles, whooping-cough, or erysipelas, or developed under the same epidemic influences as these diseases, so that these cases probably should not be regarded as genuine diphtheria. This is the view now held by Dr. Prudden himself in his latest publication, according to which renewed observations in cases of primary diphtheria have convinced him of the causative significance of the Löffler bacillus. Roux and Yersin, whose work has contributed largely to the present recognition of the Löffler bacillus as the cause of diphtheria, have also examined with negative result, so far as this bacillus is concerned, a few cases with pseudo-membranous deposits on the tonsils and pharynx of such a character that the clinician had no doubt of the existence of diphtheria. We must admit, therefore, that pseudo-membranous inflammations of the throat resembling diphtheria occur, both secondary to infectious diseases and apparently primary, in which the Löffler bacillus is not found. The further etiological study of these cases and their more precise characterization as to clinical history and pathological anatomy constitute a promising field of investigation. Until certain points have been cleared up by such investigation, there may be a certain amount of confusion as to the conception of diphtheria, but this affection seems to me even now sufficiently well characterized as to its symptomatology, pathological anatomy, and etiology to constitute a definite and independent disease which need not be confounded with other diseases.

A few words may be appropriately introduced here as regards the use of the term diphtheria. The term diphtheritis or diphtheritic inflammation is used in an anatomical sense to designate a certain kind of pseudo-membranous inflammation of a mucous membrane which may be produced by a variety of causes. The designation of certain other varieties of pseudo-membranous inflammations of mucous membranes as croupous and as pseudo-diphtheritic still further complicates the terminology. It is now generally recognized that it is best to limit the use of the word diphtheria to a definite disease and not to an anatomical process. This disease may appear in the form of each or all of the varieties of pseudo-membranous inflammations mentioned. It has for some time been clear that the boundaries of the disease which should be called diphtheria cannot be sharply drawn save on etiological grounds. So long as these grounds were lacking the boundaries were uncertain, vague, and fluctuating. We now possess definite criteria for the recognition of the disease, and it seems to me that instead of saying that diphtheria may be caused by a variety of microörganisms, a statement which is undoubtedly true if we understand by diphtheria all pseudo-membranous inflammations of the throat, it conduces to clearness and definiteness to confine the term diphtheria to the disease caused by the Klebs-Löffler bacillus. This will not necessitate material deviation from ordinary usage. The etiological basis of classification of disease is the surest and best, and in this case it will doubtless be found to correspond to a symptomatic and anatomical entity.

The data at present at hand are insufficient to settle the burning question as to the existence, independent of diphtheria, of a disease called membranous croup, supposed to be of a purely local, non-contagious character. Not a few cases of pseudo-membranous laryngitis without membranes on the tonsils or pharynx have been examined with the result of finding the Löffler bacillus. One such case, diagnosticated by the physician as croup, will be found in the series reported by Dr. Abbott and myself. In this we detected in large number the diphtheritic bacilli on the mucous membrane of the pharynx although no membranous deposit was visible, and similar results have been recorded by others, so that there is no doubt that diphtheria may occur with membranous inflammation limited to the larynx. In Dr. Prudden's first series of cases there were some instances of pseudo-membranous inflammation confined to the larynx and trachea in which streptococci, but no Löffler bacilli were found, so that it is probable that pseudo-membranous laryngitis, without involvement of the tonsils or pharynx may be produced by the streptococcus. But whether or not membranous croup may occur in the sense advocated as a purely local, non-contagious affection cannot be said to have been settled by bacteriological investigations.

An account of the results of the bacteriological study of diphtheria would be incomplete without some reference to pathogenic bacteria, which are frequently, although not constantly, found associated with the Löffler bacillus in diphtheritic exudations. These associated bacteria may be the cause of grave complications. Diphtheria is no exception to the rule that all necrotic and ulcerative processes on mucous surfaces where bacteria normally occur open the way to the invasion of pathogenic bacteria, especially to the widely distributed pyogenic streptococci and staphylococci. Mention has already been made of the probable causation of certain secondary pseudo-membranous anginas by a streptococcus. The same or apparently the same streptococcus is very commonly present in diphtheria. It is usually held to be identical with the streptococcus pyogenes. This organism, unlike the Löffler bacillus, is capable of invading the blood and tissues. The most frequent and important complication produced by this streptococcus in diphtheria is broncho-pneumonia, which develops as an aspiration pneumonia, as has been shown by the investigations of Prudden and Northrup. The common pus-producing bacterium, the staphylococcus pyogenes aureus is, next to the streptococcus, the most common pathogenic bacterium complicating diphtheria. It is to the invasion of these secondary bacteria that such complications of diphtheria as acute ulcerative endocarditis, suppuration of lymphatic glands, inflammations of serous membranes, and erysipelas are referable.

A matter which, although not new, has attracted much attention in recent years, may prove to be of such importance in the etiology of diphtheria that I will direct your attention to it for a few moments. Evidence has been brought forward intended to show that diphtheria may be communicated to human beings by domestic animals afflicted with this disease. The animals chiefly concerned are cattle, cats, and fowls. There have been reported in England during the last decade epidemics of diphtheria in which the evidence is strong that the diphtheritic germ was conveyed in milk. There are two theories as to these milk epidemics. One is that the diphtheritic virus got into the milk from persons affected with diphtheria, the other is that the cows yielding the milk were affected with diphtheria. This second daring hypothesis Klein has attempted to support by experiment. He claims that by the inoculation of two cows subcutaneously on the shoulder with a broth culture of the bacillus diphtheriæ he has succeeded in producing genuine infection with the appearance of vesicles and pustules on the udders and the elimination of the specific bacilli by the milk. These experiments should be received with great caution, as they are in opposition to all that we know concerning the exclusively local development of the bacilli at the point of inoculation. We possess no satisfactory evidence that cattle are ever affected with a natural disease identical etiologically with human diphtheria, although it is known that an affection sometimes called diphtheria may appear in calves.

That cats may acquire diphtheria and may be a means of transmitting the disease to human beings is a widely-spread belief. Medical literature contains many instances in which, on the one hand, cats appear to have contracted a disease by eating substances contaminated with the discharges from diphtheritic persons; and, on the other hand, children seem to have become infected with diphtheria by handling sick cats. Noah Webster, in his curious book on *Epidemic and Pestilential Diseases*, published at the end of the last century, noted the coincidence of cat distempers with malignant angina. In the recently published *Annual Report of the Local Government Board of England*, Klein has brought to-

gether the evidence to be found on this point. Inasmuch as cats are among the animals most susceptible to inoculation with cultures of the Löffler bacillus, acquiring a disease resembling human diphtheria, there is no *à priori* reason why they may not be the subjects of a natural disease etiologically identical with diphtheria. But the possibility of the experimental production of a disease in an animal is no proof of the natural occurrence of such disease; and thus far there is not satisfactory evidence that diphtheria occurs as a natural disease in cats. What is necessary to settle this question is to make careful bacteriological studies in suspected cases of diphtheria in cats. The matter is of sufficient interest and importance to merit careful study, and we should be glad of the opportunity of making examinations in suitable cases which may come to the notice of physicians in this vicinity.

Pigeons also are susceptible to inoculation with the Löffler bacillus, and it is well-known that a membranous inflammation of the mouth, fauces, and trachea occurs as a destructive epidemic in chickens, turkeys, pigeons, and other birds. This so-called diphtheria of fowls has not, however, been found to be caused by the same microörganism which causes human diphtheria, so that notwithstanding some rather striking observations according to which human beings have appeared to contract diphtheria from fowls, there is no positive proof of the dissemination of genuine diphtheria in this way. It may be that human beings may become infected by the germs producing the so-called diphtheria in domestic animals, but if so, there is no proof that the disease produced is etiologically identical with the disease caused by the Löffler bacillus.

We have now passed over, gentlemen, in rapid survey, some of the leading factors concerned in the causation of diphtheria. The limits of an address do not permit an exhaustive consideration of the subject even from the bacteriological point of view. Many circumstances of great importance in the etiology of diphtheria, such as the influence of unsanitary surroundings, particularly those of a domestic character, and the often dominant *rôle* of school attendance upon the dissemination of the disease could not be considered. These, however, are etiological factors which can be more profitably discussed from an epidemiological than a bacteriological point of view.

I have already made such demands upon your patience that I have not left myself sufficient time for any adequate consideration of the prophylaxis and treatment of diphtheria—subjects, indeed, which would furnish ample material for a separate discourse. I am glad to see that the subject of the treatment of diphtheria is to be presented in a special paper before this meeting. I cannot refrain, however, from directing your attention to a few of the general principles controlling methods of prevention and of treatment of diphtheria, and from pointing out the directions in which our increased knowledge of the causation of diphtheria leads us in our search for more effective measures to these ends.

The very fact that we are no longer groping in the dark, but that we know the enemy, his strength and his weakness, should inspire our courage and hope, should make us forge new weapons and sharpen our old ones, and should point out where to ward off attack and where to force the battle.

The possibility of making an early diagnosis of diphtheria by the aid of bacteriological examination enhances the chances of success in coping with this disease, both in prevention and in treatment, and, as already intimated, provision should be made in hospitals and children's asylums for making such examinations.

Inasmuch as the diphtheritic bacilli are present only in the false membranes and other local products of the disease at the site of infection, and are distributed outside of the body primarily through these, it is apparent that the patient should be strictly isolated; that unnecessary fabrics and other objects, especially such as cannot be readily disinfected, should be first removed from the room where the patient is placed; that care should be taken to prevent, as far as possible, the soiling of the person and clothing of the patient, of the attendants, and of the physician, as well as that of other objects in the room, with the discharges of the patient; that opportunity should not be afforded for the desiccation of these discharges, which then may contaminate the air, and that efficient measures of disinfection of the room and of all objects which by any possibility can become infected should be employed. That the enforcement of the measures indicated is capable of restraining the spread of the disease, even in crowded infants' asylums and hospitals, has already been demonstrated by actual experience. They require for their accomplishment education on the part of the community, of physicians, and of sanitary authorities in the principles of disinfection, and an intelligent appreciation of the dangers to be guarded against. I seize this occasion, as I have others, to urge the importance in cities of public disinfecting establishments, constructed according to improved modern principles, and of a corps of men in the employment of boards of public health, trained in proper methods of disinfection.

The length of time that the patient should be quarantined depends evidently upon the duration of the period in which active diphtheritic bacilli remain on the mucous surfaces attacked. As to this point we possess some definite information, which shows that the period varies within wide limits. In some cases the bacilli can no longer be found after the false membranes have completely disappeared; in many cases they vanish within three or four days after the local inflammation has subsided, but they have been found as much as fourteen days after the inflammation has gone, and when the mucous membrane appeared healthy. In a case reported by Löffler, the bacilli were found three weeks after the return of the temperature to the normal, and were present for a month altogether in a state capable of carrying infection. It is evidently not possible to set a precise limit for the period of isolation of the patient. Löffler suggests that the patient should not be permitted to mingle with others or to return to school for at least eight days after the disappearance of all local manifestations, and he reckons four weeks from the beginning of the disease as the period for keeping the children out of school. Where it is possible to do so, the length of this period can be controlled by bacteriological examinations of the mucous membrane of the throat.

We have thus far considered the patient as the immediate source of infection. The evidence already men-

tioned in favor of the occasional dissemination of the diphtheritic virus through the milk suggests at once the importance of controlling, not only the condition of the milk as received for distribution, but also of inspecting the sources of milk supply. Evidently milk should not be permitted to be sold from dairies attached to households where there are cases of diphtheria.

It does not seem to me permissible to throw out altogether the possibility of the conveyance of diphtheria by domestic animals, especially by cats, which are likely to be fondled by children even more when the animals are sick than when they are well.

In considering what can be done to render children less vulnerable to diphtheria, and to ward off an attack after exposure to the disease, the question arises, what conditions of the individual we may regard as predisposing causes. Clinical experience, as well as experiments upon animals, indicate that morbid states of the mucous membrane of the throat, such as ordinary catarrhal inflammations, swollen tonsils, sensitiveness to "catching cold," the existence of measles and scarlatina, are predisposing factors. At all times, but especially during the epidemic prevalence of diphtheria, it is important to hold in check these morbid states as far as possible. Experiments upon animals would seem to indicate that some lesion of the mucous membrane is essential for the lodgement and multiplication of the diphtheritic bacilli, but it would be entirely unjustifiable to transfer directly to human beings the results of these experiments without warrant from clinical experience, and while this experience shows the importance of such lesion, it also shows that perfectly healthy children may be attacked by diphtheria, so that we have no right to assert that in human beings infection with the diphtheritic bacilli cannot occur without preëxisting alteration of the mucous membrane. The frequency and readiness with which the tonsils become the seat of the diphtheritic process may be explained by the peculiar anatomical structure of these parts, as has been shown by the researches especially of Stöhr and of Hodenpyl. The rarefaction of the covering epithelium and the emigration of leucocytes to the surface found as a normal condition, seem to render the tonsils particularly vulnerable to the lodgement of the diphtheritic bacilli, and the lymphatic structures, here normally laid almost bare, are favorable for the absorption of the toxic products of the bacilli, as has been pointed out in the recent interesting paper of Hodenpyl, "On the Anatomy and Physiology of the Faucial Tonsils."

The prophylactic value, in persons liable to exposure to diphtheria, of cleanliness of the teeth and mouth and of the frequent use of weak antiseptic mouth-washes, nasal douches, and gargles is worthy of the attention of physicians. For this purpose Löffler recommends aromatic waters, weak sublimate solutions (1 : 10,000 to 1 : 15,000), or, perhaps better, solutions of mercuric cyanide (1 : 8000 to 1 : 10,000); also, chloroform water, chlorine water (1 : 1100), thymol (1 : 500 parts of 20 per cent. alcohol). The use of some of these solutions evidently involves danger of poisoning in children unless special precautions are taken.

The suggestion recently made by Dr. Jacobi, that, in addition to caring for those sick with diphtheria, places of refuge should be provided for the temporary stay of children sent from home to escape infection, seems practical and calculated to meet the circumstances of many families.

The dominant *rôle* often played by schools in the spread of diphtheria throughout a community renders especially urgent the introduction of a system of daily medical inspection of the schools.

The importance of letting air and sunlight into dark, damp dwellings, and of attending in general to matters of domestic sanitation, is a lesson plainly to be drawn from the history of such places as nests of diphtheria.

If the researches relating to the etiology of diphtheria which have been so fruitful in recent years have not added to the list of agents—whose name is legion—employed in the treatment of this disease, they have given precision to the indications for treatment. From what has been said concerning the localization of the diphtheritic bacilli, and the peculiar characters of the toxic substances produced by them, it is apparent that the strongest indications exist, on the one hand, for the earliest possible local treatment by germicides, and, on the other, for the destruction of the poison in the system, and, in the absence of any antidote, for supporting measures of treatment which shall enable the body to withstand the effects of the poison.

The superficial situation of the specific bacilli in diphtheria seems to render this disease especially favorable for effective local antiseptic treatment, but the difficulties encountered in actually destroying the germs in the diphtheritic deposits, even when these are accessible to local applications, emphasize the fact that the obstacles to thorough disinfection within the human body are exceedingly great. Many of our most powerful antiseptics, when they come into contact with the tissues and fluids of the body form precipitates which render them largely inert, and for this and other reasons they penetrate but slowly or not at all beyond a very superficial extent. But above all we are hampered by the fact that nearly all disinfectants are many times more poisonous to the cells of the human body than they are to bacteria.

But notwithstanding the difficulties mentioned, and still others suggest themselves, it has been shown both by bacteriological examinations and by clinical experience that local disinfectant applications in diphtheria are useful and may cause the specific bacilli to disappear. An important experimental study of the action upon the diphtheritic bacilli of many germicides and agents used in treating diphtheria has been recently published by Löffler, who endeavored to imitate as far as possible in test-tube experiments the conditions present in the mucous membrane when affected with diphtheria. I can only refer you to Löffler's work and his recommendations. Any attempt to consider here therapeutic agents would lead us far beyond the limits of our subject as well as of our time.

Even if it were within the power of the physician to bring about the complete destruction of the diphtheritic bacilli after the disease has taken firm hold, he would nevertheless in many cases be called upon to combat the effects of the toxæmia resulting from the absorption of the toxic albumin already produced by the bacilli. In this respect there is an analogy between diphtheria and tetanus. In both of these diseases the specific bacteria develop only locally at the site of infection, where

they produce substances of extraordinarily poisonous power which enter the circulation. In the case of tetanus we are familiar with the fact that even the complete removal of the infected part will not prevent a fatal issue after a certain amount of poison has been produced and has entered the system. Experiments already mentioned have shown that animals may be killed by the injection of an amount so small of the toxic albumin produced by the diphtheritic bacilli that for several days no symptoms are manifested. The physician certainly cannot neglect the dangers of intoxication by such a substance as this.

The interesting experiments of Behring and Kitasato upon the production of immunity against tetanus and diphtheria, encourage us to hope that we may in time come into the possession of direct antidotes to the chemical poisons of these diseases. These experiments have shown that the blood and the blood-serum of animals naturally or rendered artificially immune against diphtheria, possess the remarkable property of neutralizing or destroying the toxic substances produced by the diphtheritic bacilli, and that immunity depends upon this property. The same is true of tetanus. Whether or not any therapeutic application in human beings can be successfully made of this property of the blood of immune animals, has not yet appeared.

Failing any such antidote, it should be the aim of the physician to assist nature to withstand the poison by supporting the strength of the patient in every way possible by remedies and food.

I have attempted, gentlemen, in this address to show, although necessarily in an imperfect and fragmentary manner, that the discovery of the bacillus diphtheriæ and the study of its properties has rendered our knowledge of diphtheria in many ways more accurate and fuller, has settled many questions of controversy, and has dissipated some errors. The new light has not yet penetrated into all of the dark corners, but when we consider what has been gained in less than a decade, we are justified in expecting that here also obscurity will disappear, and that diphtheria will become in all respects one of the best understood, and, we may hope, one of the most successfully combated of the grave infectious diseases.

MEDICAL PROGRESS.

Ergot for Gonorrhœa.—ROICKI, in the *Gazette de Gynecologie*, considers ergot as an excellent infection for the rapid cure of chronic gonorrhœa. He administers it at the same time by the mouth in the form of pills, and by urethral injection after the following formula:

℞.—Ergotin . . . . . 4½ grains.
Distilled water . . . 9 ounces.

Use as an injection several times a day.

These injections are very well borne. The same treatment is also applicable for other urethral hæmorrhages.

Salicine for Pelvic Pain.—CHÉRON states that in pelvic pain during the course of metritis or salpingo-ovaritis as well as in pelvic cellulitis and peritonitis, particularly if these troubles are associated with rheumatism, that salicine is of value. In those women who, after the menopause, have uterine pain and discomfort in the lumbar or sacral region, with occasional flushes of heat and neuralgic dartings, a careful interrogation as to any history of rheumatism should be sought for, and if this disease is found to be present salicine administered. The dose which he ordinarily recommends is fifteen grains, to be divided into three parts. Very soon after the drug is administered the pain decreases. Chéron generally directs that one drachm of salicine be divided into twelve capsules. One of these capsules may be given morning, noon, and night, the patient taking a glass of water at the same time, to prevent irritation of the stomach.

Treatment of Infantile Chlorosis.—ELOY gives the following summary of the best treatment, in his opinion, of this condition. He points out that with children, as well as adults, medication should be chiefly hygienic, and associated with the use of arsenic and iron. The hygienic treatment consists in the use of outdoor exercise and baths, though he does not approve of the sojourn by the sea, but prefers residence in the mountains. Gymnastic exercise, and those movements which tend to increase the respiratory capacity and develop the muscles of the thorax, are particularly indicated. The baths, when administered, should be, as a rule, salt baths, and cold water should be most carefully, if ever, employed. The diet should be carefully arranged; only foods which are readily digested should be given, and those meats which are particularly nutritive administered. As gastric dilatation, alterations in the gastric juice or constipation may all be causes of chlorosis, they should be remembered when treating such cases. The medicinal treatment consists in the administration of small doses of quinine and the following prescription, particularly if constipation is constantly present:

℞.—Phosphate of soda . . 1½ drachms.
Phosphate of potassium . ½ drachm.
Red wine . . . . 6 ounces.
Syrup of bitter orange . 1 ounce.

A teaspoonful to a dessertspoonful after each meal.

In other cases it may be well to administer, in solution or syrup, the phosphate of calcium in small doses. If the child is old enough to take bitter substances, it may use the following:

℞.—Tincture of cascarilla
" gentian } of each, 1½ drachms.
" rhubarb

Sometimes the tincture of gentian may be replaced with tincture of calumba with advantage. For the improvement of the digestion the following may be employed:

℞.—Dilute hydrochloric acid . 15 minims.
Syrup of bitter orange-peel 1 ounce.
Tincture of bitter orange-peel 1 drachm.
Infusion of cascarilla . . 2½ ounces.

A teaspoonful after each meal.

It may also be well to employ some of the aërated waters. In regard to the salts of iron, Simon uses the lactate of iron; but in other cases the phosphate of iron may be given. Small doses should, of course, be given,

as iron under these circumstances should not be given in large enough amounts to produce constipation. Arsenic, when administered, should be given in small doses, and carefully watched lest it produce irritation of the kidneys or gastro-intestinal tract.

Treatment of Amenorrhœa.—

℞.—Bichloride of mercury . . . 3 grains.
Arsenite of sodium . . . 3 "
Sulphate of strychnine . . 1½ "
Carbonate of potassium } of each 45 "
Sulphate of iron }

Make into sixty pills and give one pill after each meal. —*Revue Méd.-chir. des Mal. des Femmes.*

Prescription for Eczema of the Anus and Genital Organs.—Lustgarten advises, in *La Semaine Médicale*, the following ointment:

℞.—Oleate of cocaine . . 15 to 30 grains.
Lanolin . . . . 1 ounce 2 drachms.
Olive oil. . . . 2½ drachms.

Use externally.

Make an application of this ointment twice daily, and after each application powder the affected part with any absorbent powder whatever. Warm soap baths will aid in curing the disease. In pruritus ani, suppositories of cocaine can be employed with advantage.

Aphrodisiac Pills.—According to the *Journal de Médecine de Paris*, Lutaud employs the following pills for the purpose of producing sexual stimulation:

℞.—Powdered nux vomica . . ¾ grain.
Bromide of iron . . . 15 grains.
Phosphorus . . . . ⅙ grain.
Excipient, a sufficient quantity.

Make into twenty pills and take one each night.

In addition to this treatment the patient should resort to hot and cold douches and gymnastic exercise, massage, and systemic tonics, and frequently coca will be found of value, as in the opinion of Lutaud this drug possesses very distinct aphrodisiac powers.

Treatment of Gonorrhœa by Bicarbonate of Soda.—According to the *Journal de Médecine de Paris*, Casselan during the past four years has employed a solution of bicarbonate of soda in the strength of 1 : 100 in the treatment of gonorrhœa. He has treated thirty-three cases and obtained thirty-three cures in from two to three weeks by the employment of injections of the solution named. He bases his treatment on the belief that the virulence of the disease is in direct proportion to the acidity of the secretions.

Influence of Acute Fever upon the Course of Pulmonary Phthisis.—According to the *Revue Internationale de Bibliographie*, Chetmouski believes that a high temperature due to another disease very distinctly influences the course of pulmonary phthisis. This Russian clinician, in support of his views, refers to the case of a woman, aged thirty years, who was suffering from very distinct evidences of pulmonary phthisis, who developed eysipelas of the face accompanied by high fever. Simultaneously with the development of the intercurrent disease the pulmonary symptoms immediately diminished, and during the next eight days the bacilli disappeared from the sputum. The cough was decreased and an ulceration of the palate underwent cicatrization. In another case occurring in the person of a physician, aged thirty years, in whom there was consolidation of the apex of the right lung with bacilli in the sputum, typhus fever manifested itself. The fever lasted fourteen days, and convalescence was rapid. Immediately before the fever the patient's weight was 140 pounds, three months afterward 170 pounds, and the cough had almost disappeared.

The Treatment of Typhoid Fever.—Smakovsky, during the space of two and a half years has treated 700 cases of typhoid fever in the following manner:

℞.—Calomel . . . . . ½ grain.
Sugar . . . . . 4 grains.

This is to be made into ten powders and one powder given each hour until the evacuation from the bowels becomes copious and soft. The patient is also given a gargle, composed of a solution of chlorate of potash, to prevent mercurial stomatitis. If there are evidences of feebleness of the heart, the calomel is stopped and small doses of the infusion of digitalis are administered. After the calomel has produced its antiseptic and alterative influence the diarrhœa, if it has become excessive, may be controlled by the use of the following powders:

℞.—Subnitrate of bismuth . . 2 grains.
Naphthalin . . . . ½ grain.
Sulphate of quinine . . 1 "

One of these powders is to be given four times a day. For the cough Smakovsky recommends:

℞.—Aqua ammonia . . . 1 drachm.
Tincture of eucalyptus . 1 ounce.
Essence of peppermint . 10 drops.

Ten drops to be given every two hours. This prescription is also of advantage in acting as a disinfectant of the mouth. The Russian investigator just named is convinced that the mortality of typhoid fever under such treatment is very much lessened. — *L'Union Médicale.*

Ointment for Intertrigo.—

℞.—Boric acid . . . . . 7 grains.
Lanolin . . . . . 12 drachms.
Vaseline . . . . . 3 "

This ointment is to be applied to the diseased area, which is first cleaned by the use of a mild soap.

Purgative Pills.—

℞.—Aloes . . . . . 15 grains.
Resin of scammony . . . 7 "
Resin of jalap . . . . 7 "
Calomel . . . . . 7 "
Extract of belladonna . . 3 "
Extract of stramonium . . 3 "

Make into twenty-five pills and give one to two a day.

CURRENT LITERATURE.

SATURDAY, MAY 16, 1891.

TACHYCARDIA AT THE MENOPAUSE.

PROFESSOR E. HEINRICH KISCH defines tachycardia as a purely nervous disturbance of the heart function, independent of every organic disease of the heart and vessels, and characterized by a motor change of the heart function, by which a marked, and at times extraordinary, increase in the frequency of the contraction of the heart occurs. It is found associated with anæmia, cachexia, neurasthenia, and with diseases of the stomach, diphtheritic angina, diseases of the lungs, brain, spinal cord, and sexual organs.

Kisch directs attention to a form of tachycardia which occurs in women at the menopause. He gives brief accounts of the previous observations on this point by Stokes, Moon, Groedel, Clément, and Boerner. His own experiences have been obtained at the health resort in Marienbad, where women at the climacteric, with their manifold difficulties, make up the chief contingent. At this time of life, if the menses begin to appear at longer or shorter intervals than the normal period, cease altogether for two or three months, or, if the blood excreted assumes an abnormal character, a woman, whose heart up to that time was acting perfectly normally, complains of palpitation which occurs in paroxysms. This palpitation appears at times without any cause, at times after an insignificant cause, which before did not excite nerve action. The attacks occur in any position, walking, sitting, lying, and even during sleep. The feeling of accelerated and strengthened heart-beat is described as very annoying, and is at the same time associated with a feeling of anxiety, with the sensation of pressure upon the breast, beating in the carotids, and pulsation of the abdominal aorta. Moreover, the patient feels as though the blood was surging toward the head, and has fleeting "beats" and violent headache. Occasionally, toward the close of the paroxysm of tachycardia, there are bright spots before the eyes, noises in the ear, dizziness, and, but rarely, faintness.

The pulse is increased in frequency from 120 to 150, and in Kisch's cases was generally strong, well filled, and regular. Sphygmographic tracings show a pulse of considerable volume, low tension, and sub-dicrotic or dicrotic. The heart-sounds are pure. At times, during an attack, the face, throat, and breast become suddenly red. Bright red spots appear suddenly upon the parts named, and disappear usually in a few minutes; they are associated with burning feelings; at times sweat breaks out upon the head and back. These attacks of tachycardia may occur several times a day, or cease for several days, and may last from several minutes to a quarter of an hour.

The tachycardia is also usually associated with a condition of bodily and mental disquiet, incapacity for regular activity, restless sleep interrupted by dreams, and a general nervous excitability. Kisch does not agree with Clément and Boerner that anæmia is always present in these women. In most of his cases there was plethora. There was neither marked dyspnœa nor cardiac asthma present; symptoms of stasis were very rarely observed; œdema of the feet was present in individual cases, though the urine was always free from albumin.

Kisch says he has seen, in the past five years, twenty-eight cases of paroxysmal tachycardia in women at the climacteric. Of these patients 25 were between forty and fifty years of age. The menses were irregular in 26, and had completely ceased in 2. One patient was unmarried, 2 were sterile, the remaining 25 had borne several children. A sudden cessation of the menses had not occurred in any case. In 12 cases, in addition to the paroxysmal tachycardia, there was disturbance of the stomach and bowels, which Kisch has described as uterine dyspepsia. He thinks it noteworthy that in three of the women there had been, at the beginning of menstruation in childhood, nervous palpitation, which subsequently completely disappeared.

The duration of the disease may be from a few weeks to two years or more. It may persist as long as the irregularity of the menses persists, but may also extend beyond this period, and may still occur when menstruation has entirely ceased; but Kisch has not observed any bad sequelæ of significance.

Kisch has found that the systematic employment of gentle purgatives, conjoined with appropriate diet, exercises a very favorable influence for the amelioration of the attacks. His course consists in residence in mountain air, bland food, active bodily movements, cold washings, and moist applications to the belly. He finds the sulphate of soda waters of Marienbad very effective. Bromides, in small doses, are given for the disagreeable feeling of palpitation, and as a quieting remedy.

As to the etiology, Kisch traces it directly to changes occurring in the ovaries at the time of the climacteric.—*Prager med. Wochenschrift*, March 11, 1891.

PATHOGENESIS OF THE AMŒBÆ OF DYSENTERY.

KARTULIS, of Alexandria, complains that specialists in parasites have ignored the importance of the amœba in dysentery, notwithstanding the fact that his researches have been confirmed by observations in Russia, Bohemia, Greece, and America. He maintains that the amœbæ occur not only in all true cases of dysentery, but also always in dysenteric liver abscesses. He has repeatedly sought for the amœbæ in hundreds of cases of other intestinal affections, but has never found them.

After a number of experiments Kartulis found that the best medium for the cultivation of the amœbæ was prepared by boiling for fifteen minutes twenty or thirty grammes of fresh straw in two litres of water. The fluid is then filtered and sterlized. Large-sized test-tubes, holding 50–100 c.cm., may be used, and are filled with the fluid. A few drops

of the slimy masses in a fresh dysenteric stool are then mixed with the fluid in the tubes, which should be kept in an incubator at a temperature of 86° or 100° F. After the lapse of twenty-four or forty-eight hours there forms on the surface of the tube a film like spider's web, which consists of freshly developed amœbæ, in addition to many bacteria. The amœbæ grow best when the vessels are left exposed to the air. The amœbæ of the cultures are much smaller than those of the stools, have a lively movement in wandering spore form, but throw out no pseudo-pods. Ciliæ are absent, but nucleus and vacuoles are very distinct, especially when the bodies are stained with aniline colors. Here and there are seen some amœbæ, which are like in form and size those used for inoculating the tube. Very often, also, there are seen small forms, round, homogeneous, and glistening, which have a rapid and dancing motion. These take the aniline colors intensely, and Kartulis regards them as free nuclei.

The spores gradually develop to large amœbæ. The amœbæ then execute movements by throwing out pseudo-pods. Toward the fourth and fifth days there are seen between the lively amœbæ, forms which are much smaller, about the size of a white blood-corpuscle. They are round, quiet bodies with a fine contour, small nucleus, and fine protoplasm. The forms become smaller gradually, form two contours, which appear yellowish, with dark protoplasm. Their sizes vary between 5 and 7 m. As amœbæ develop from these forms, there is no doubt that they are spores. Within eight or eleven days the spores increase; the amœbæ are very sparingly present.

In order to develop the spores further it was found necessary to add neutral, or slightly alkaline, bouillon to the fluid in the culture vessel. Kartulis has seen old spores, kept at the temperature of the room for four months, develop in this medium. He has never been able to develop amœbæ from the stools of non-dysenteric patients. His efforts to obtain pure spores were unsuccessful. Only once did he succeed in carrying the amœbæ through three cultivations free from other microörganisms.

Efforts to inoculate rabbits and guinea-pigs, either with fresh dysenteric stools or with cultures by the amœbæ, were negative. Dogs and cats have been successfully inoculated by the bowel. Kartulis gives in detail his experiments upon cats. He concludes from his experiments that the amœbæ of dysentery are the sole causes of dysentery.

As control experiments he cultivated other bacteria found in dysenteric stools, among them the bacterium coli and the bacillus of the so-called green diarrhœa, and injected them into the bowel of young cats.

He also cultivated upon gelatin plates several microörganisms from dysenteric stools, and after he had convinced himself that there were no longer any amœbæ alive, he injected the cultivations *en masse* into the bowels of young cats.

He filtered dysenteric stools through flannel, which retains the amœbæ, and injected the filtrate into the rectum of cats.

A pure culture of the bacillus of Chantemesse and Vidal, obtained from their laboratory, was also injected into the bowels of young cats.

Finally, cats were fed upon the organisms mentioned. All these experiments had a negative result. Not one of the animals was taken sick with dysentery, and only in one instance was there a slight transient diarrhœa.

It yet remains for some one to find the amœbæ outside the body. Kartulis thinks it is probably to be found in water.—*Centralblatt für Bacteriologie und Parasitenkunde*, March 21, 1891.

SOCIETY PROCEEDINGS.

THE AMERICAN MEDICAL ASSOCIATION.

Forty-second Annual Meeting, held at Washington, D. C., May 5, 6, 7, 8, 1891.

[Continued from p. 540.]

Fourth Day—General Session.

The closing session of the American Medical Association was held in the Opera House on May 8th, at 10.15 A.M. Dr. W. L. Schenck, of Kansas, not being present, his address on State Medicine was read by title, and referred to the Publication Committee. The President announced the following committee to memorialize Congress for the establishment of the new cabinet officer, the Secretary of Public Health: Drs. C. G. Comegys, Ohio, *Chairman;* J. F. Hubbard, Indiana; N. S. Davis, Illinois; J. C. Culbertson, Ohio; Dr. Richardson, Louisiana; W. B. Atkinson, Pennsylvania; C. A. Lindsley, Connecticut; C. A. Hughes, Missouri: W. T. Briggs, Tennessee; H. D. Didama, New York; Thomas B. Evans, Maryland; A. J. Stone, Minnesota; J. P. Logan, Georgia; W. W. Kerr, California; Charles Dennison, Colorado; W. L. Schenck, Kansas; P. O. Hooper, Arkansas; H. J. Swearinger, Texas; Wirt Johnson, Mississippi; T. F. Wood, North Carolina; J. N. McCormick, Kentucky; J. T. Reeve, Wisconsin; H. O. Walker, Michigan.

The report of the Committee on the Jenner Vaccination Centennial was received. Replies to the inquiries sent out by the committee to leading medical men of the various States were received from twenty-two of the States. The committee recommended the preparation of an eulogy on the great discoverer, and the reading of papers appropriate to the subject, and suggested as the day of celebration the 14th of May, 1896. The eulogist is to be selected by the committee, as well as an editor and compiler, the latter to collect and compile the literature of the subject, and to assume charge of all the scientific matter, and to publish all the material thus collected in a sumptuous volume with suitable illustrations.

Dr. N. S. Davis, of Illinois, moved that the report be adopted, and offered as a resolution that the committee be continued for another year, that the 14th of May, 1896, be appointed as the day of celebration, and that the meeting of the Association for that year be so arranged as to include the above date. Carried unanimously.

The President annnounced the following committee

to investigate the relation of contract railroad surgeons in the United States to the code of ethics of the medical profession, and to decide what action should be taken by the Association in reference to corporations employing surgeons only under such rules as were laid down by them: Drs. J. Ford Thompson, District of Columbia; R. G. Ellegood, Delaware; J. D. Fernandez, Florida; W. S. Powell, Georgia; B. M. Griffin, Illinois; J. F. Hibbard, Indiana; G. F. Jenkins, Iowa; W. L. Schenck, Kansas; J. M. McCormick, Kentucky; A. Garcelon, Maine; G. L. Taneyhill, Maryland; A. L. Norris, Massachusetts; J. E. Emerson, Michigan; P. A. Millard, Minnesota; T. F. Wood, North Carolina; G. P. Conn, New Hampshire; D. Benjamin, New Jersey; J. B. Roberts, Pennsylvania; W. P. Porcher, South Carolina; T. J. Hoppell, Tennessee; D. R. Wallace, Texas; D. C. Hawley, Vermont.

The subject of the incorporation of the Association elicited some interesting discussion. Dr. Hibbard, of Indiana, moved that a committee of seven be appointed to consider the question of the incorporation of the Association, and to report at the next annual meeting. Carried.

President Taylor, of the American Pharmaceutical Association, and Professor Remington, of Philadelphia, were invited to the platform, and made short addresses.

The report of the Secretary on State Medicine was received, and adopted as read.

Dr. N. S. Davis, chairman of the Judicial Council, reported that the subjects assigned to the Council were under judicious consideration, and that the report would be submitted at the next annual meeting.

The President announced the appointment of the officers of the various sections, and introduced Dr. R. H. Marcy, of Boston, the President elect, who delivered a short address of thanks, and appreciation of the honor conferred upon him.

The General Session then adjourned.

SECTION OF THERAPEUTICS AND PHARMACY.

The second day's meeting of the Section of Therapeutics and Pharmacy discussed the following proposition of Dr. Rice, of New York, to create "A Joint Committee on Therapeutics and Pharmacy:"

The new movement of establishing closer and official relations between the two professions of medicine and pharmacy promises to yield beneficial results, and has been started at a time when its desirability, or rather necessity, is generally recognized. Both professions have many interests in common, and both have to supplement each other by their special knowledge and attainments. Many are the topics—ethical, legal, historical, politico-economical, hygienic, statistical, educational, social, and particularly scientific (omitting "financial")—which can and will be profitably discussed at joint meetings of representatives of the two professions; and some of these topics may even be said to form burning questions which have hitherto been treated by the medical and pharmaceutical press, mostly in an *ex parte* manner. It is hoped that these may hereafter be brought to a solution satisfactory to all.

But the discussion of professional topics, or the reading of papers thereon, at the joint annual meetings, does not seem to be sufficient to infuse life into a co-partnership such as it is proposed to establish and maintain between the two professions. Something else of a more lasting and permanent interest—something of tangible utility, so to say, seems to be wanted to serve as a firmer bond. In the judgment of the writer, such a bond can be established—and, indeed, its want has long been felt—by the official interchange of, and decision on, professional or scientific problems between the two professions. The physician as well as the pharmacist each possesses, if properly trained, a fund of special knowledge, often laboriously acquired and constantly augmented by daily practice and experience, which, in these days of rapid progress, can no longer be expected to be met with, combined in one and the same person, but which has to be gathered and studied by specialists for the benefit of the other members of their own, or a kindred profession. Yet it is an indisputable fact that many important facts which have long been known to, or recognized by one profession, and which yet virtually concern the other, remain often entirely unknown, or only imperfectly known to the latter for a long time. If there were an official channel, through which such needful information could be conveyed, at regular intervals, from one profession to the other, much would thereby be gained. It may be well to mention an example by way of illustration. Many physicians are in the habit of prescribing aconitine without specifying what kind they intend. They are not aware that there are four or five different kinds in the market, each of them in vogue or preferred in some particular country or locality—one being the pure, crystallized alkaloid of exceedingly great power; another an amorphous substance of comparatively feeble strength; another one, made by a different process, or perhaps from a different kind of aconite, being of an intermediate strength, etc.—and that they are liable to have the most powerful dispensed when they perhaps intended the weakest, or *vice versa*. Would it not be useful to present to the medical profession, once a year at least, a concise summary of important matters of this kind, which would suggest themselves from time to time? As a rule, physicians do not read pharmaceutical journals or circulars issued by chemical houses; hence, information regarding subjects like that above-mentioned often reaches them only when some serious accident has happened. If there were a source of information on topics of this kind, prepared by pharmacists specially for the benefit of physicians, much good would result. On the other hand, physicians often observe objectional features connected with the form or efficacy of pharmaceutical or Galenical preparations—as, for instance, deficiency of therapeutic action due to improper menstrua, improper vehicles, improper coating, etc. The same medium of communication could be used for drawing the attention of the pharmacists to these matters.

If it is conceded that such a mutual exchange of information or of problems is desirable, it will not be difficult to devise a plan by which it may be carried out. The writer suggests the following, at least as a basis upon which something better may be erected:

1. The American Medical Association, through its proper Section [or in any other way that may be determined on] may annually appoint seven [or any other number] members, who, together with a like number

of pharmacists, who may be appointed by the American Pharmaceutical Association, shall constitute the "Committee on Therapeutics and Pharmacy."

2. This committee shall elect a chairman and vice-chairman, only one of whom shall be chosen from the same profession. These two officers shall also be the chairmen of their respective sections (medical and pharmaceutical) in the committee.

3. The committee may either hold joint sessions at such times as may be agreed upon, or it may transact its business by correspondence.

4. Either section of the committee shall be authorized and instructed to consider any professional questions or problems which may be submitted to it by the other; and, after deliberation, to give such an opinion, or such a decision, as the subject may warrant, from the standpoint of the profession rendering the opinion or decision.

5. The section of the committee making the request or appeal shall bring the reply or decision of the other to the knowledge of the whole of its own profession, or, when this is unnecessary or inadvisable, at least to the notice of those to whom it more particularly applies.

6. The committee, or, if so determined by it, either or both of its sections separately, shall annually report, at the joint meeting of the two professions [or, say, to the Section on Materia Medica and Pharmacy of the American Medical Association], the nature of the questions and problems mutually submitted, if any, and the respective opinions or decisions rendered. These decisions shall be subject to a revision, if one is called for, at this meeting.

7. Each section of the committee shall annually present a report upon professional topics which it may be thought particularly necessary to bring to the attention of the other profession. Thus, the Section on Pharmacy may present, for instance, a report on new remedies, accompanied by practical suggestions as to their best mode of administration, as to precautions to be observed in prescribing them, as to incompatibilities to be avoided, and similar topics. And it may submit questions or problems involving *therapeutics as it affects pharmacy* to the other section, with a view of having them answered or decided. The Section on Therapeutics may, in its turn, present problems or questions involving *pharmacy as it affects therapeutics* to the other section, for solution or answer.

In presenting this plan, the writer had in view scientific, professional topics rather than ethical ones. There is no doubt that the latter will form an abundant source of discussion, and that this will, if properly conducted, bring the two professions closer together; but it will, under most circumstances, be preferable to relegate such topics to the general annual meeting, there to be fully discussed and decided, rather than to have them passed upon by a small subcommittee, the action of which may, after all, not be finally indorsed by the Association. On the other hand, a reversal of any decision by the committee, on scientific topics, rendered after proper study and discussion, is scarcely to be apprehended.

It may not be found practicable to carry out the above plan, or something similar to it, at once. Moreover, at this first meeting of the two professions, there may not be sufficient time to discuss it properly. In this case, it may be held over for the next meeting, and those who take an interest in the matter may, in the meantime, carefully examine it, so as to be prepared to offer improvements, should it ever be brought up for action.

Section of Practice of Medicine and Physiology.

Dr. J. S. Nowlin, of Shelbyville, Tenn., read a report on an "Epidemic of Cerebro-spinal Meningitis." From the symptoms in these cases, and the results from the use of quinine, the speaker drew the conclusion that the so-called cerebro-spinal meningitis is really a manifestation of malaria.

Dr. Dock said he did not believe the author meant to imply that all epidemics of the disease in question are malarial, since some of them occur in places and at times when the severe manifestations of malaria do not appear. It was important, however, to bear in mind that malaria can produce any and all the symptoms common to inflammatory diseases of the central nervous system. These cases can be properly distinguished by the microscopic examination of the blood, and the recognition of them is of the greatest importance, since in the malarial cases quinine must be used, no matter how severe the symptoms are, nor how greatly they resemble those of inflammatory disease; and not only is this without harm, but with the result of early recovery.

Dr. W. B. Davis, of Cincinnati, read a paper on "The Prevalence of Albuminuria in Persons Apparently Healthy," indicating the belief that albuminuria is very common, and not pathognomonic of nephritis.

Dr. Eccles, of Brooklyn, said he had found albumin in the urine of persons without nephritis.

The Secretary read a paper by Dr. J. F. Jenkins, of Tecumseh, Mich., on "The Treatment of Spasmodic Asthma by the Fluid Extract of Euphorbia Pilulifera."

Dr. Aulde described his method of using the drug, and the success following it.

Dr. Karl von Ruck, of Asheville, N. C., presented a paper on "Professor Koch's Method for the Cure of Tuberculosis, and its Results in Pulmonary and Laryngeal Cases," claiming for the remedy, in connection with other means, a positive and curative therapeutic action.

This was followed by a paper by Dr. S. P. Kramer, of Cincinnati, with "A Report of Cases Treated with Tuberculin in the Good Samaritan Hospital," the results being favorable.

Dr. Simonton, of California, said he thought the reaction now taking place in regard to this remedy would subside, and that the profession would settle down to a realization of its value as the best remedy for tuberculosis in proper cases. Its diagnostic value, the speaker said, was not absolutely fixed, but was sufficient to make it one of the methods to be used.

Dr. Osler gave an outline of the results obtained in the Johns Hopkins Hospital. On the whole, his experience had been disappointing.

Dr. Eccles thought that Koch would yet discover the cure for tuberculosis; that he was at present in the position of Columbus on his second voyage.

Dr. Welch gave a description of the histological appearances in the cases in which tuberculin had been used.

The Chairman described the beneficial results obtained by injecting a toxic substance from a hitherto undescribed bacterium in phthisical subjects. Drs. Von Ruck and Kramer concluded the discussion.

DR. CHAS. H. SHEPARD, of Brooklyn, N. Y., read a paper on "The Action of the Turkish Bath in Disease."

DR. GEORGE DOCK, of Galveston, Texas, gave an abstract of a paper on "The Malarial Parasites, and the Forms of Disease in which They Occur in Texas."

Dr. Osler spoke of the great practical value of such studies, and of their special value in the elucidation of the nondescript fevers of the South. He said that in certain cases he had been unable to distinguish between typhoid fever and malarial remittent, except by the microscopic examination of the blood. He considered it especially gratifying to see that in Germany, where scepticism of the significance of the discovery of Laveran had long prevailed, they were now coming around, and that the situation has been accepted in Koch's laboratory.

DR. W. J. HERDMAN, of Ann Arbor, read a paper on "Electricity Therapeutically Considered," advocating the use of commercial currents rather than the products of instrument-makers.

Dr. Davis thought the use of such currents dangerous, on account of the possibility of falling wires.

Dr. Herdman showed that by the use of a fusible metal plug such accidents would be harmless.

Several papers were read by title and several more referred to the publishing committee.

The Chairman announced that at the request of Dr. W. W. Johnston, of Washington, the committee appointed last year to investigate the Fevers of the South would be continued for another year.

Dr. Woodbridge, of Ohio, chairman of the committee of three appointed to confer with similar committees from other Sections, reported that the Section chairmen were requested to appoint committees of three, to advise with the Section officers on papers submitted to the Sections, and that the original conference committees be continued for another year.

The report was adopted and the Chairman appointed as the advisory committee, Drs. Osler, of Baltimore; Herdman, of Ann Arbor; and Dock, of Galveston.

The Nominating Committee reported the election of the following Section officers for the ensuing year: Dr. Eads, of Washington, chairman; Dr. French, of Cincinnati, secretary.

On motion of Dr. Woodbridge, of Ohio, a vote of thanks was tendered the officers, and the Section then adjourned.

SECTION OF NEUROLOGY AND MEDICAL JURISPRUDENCE.

The meeting was opened by a paper on "Paretic Dementia and Life Insurance," by DR. JAMES G. KIERNAN, of Chicago. He said that the increase in paretic dementia had raised a question as regards life insurance. As an instance, he cited the case of a man who was taken to a noted alienist by his brother. Upon a careful examination of the case, the alienist pronounced it one of paretic dementia, and said that the patient would not live more than three years. The brother at once had the afflicted brother's life insured, concealing his condition from the insurance company's examiner, who was not sufficiently skilled to detect the disease. Later the patient died, and the company was compelled to pay the insurance. He spoke of other instances of the same character. According to the speaker, many of these mistakes are made by examiners who are inefficient, and have been appointed through influence rather than professional merit. According to a legal decision by the Iowa courts, insurance companies are responsible for these mistakes, and must pay the insurance. Dr. Kiernan thought it unjust that the insurance companies should have to pay in cases of this kind, but also blamed them for employing medical examiners who were not capable of detecting the early symptoms of this disease.

DR. N. ROE BRADNER, of Philadelphia, next read a paper upon the "Private Treatment of Insanity." He said that our public asylums were institutions of the greatest value, but that the time had come when the private treatment of the insane must demand greater attention. Dr. Bradner objected to our public asylums on the ground that the medical attention was not sufficient, as the physicians in charge always had many more patients than they could properly attend to, and as a consequence many cases, which might be benefited by treatment, became incurably insane because of this neglect. He considers that many of our public asylums are simply places of detention. His reasons for favoring the treatment of the insane in private institutions are, that the physicians in charge do not have a greater number of patients than they can properly attend to; that the educated and refined are not thrown together with the lower classes of society, as is often the case in public institutions; that the restraint is not so severe, and is better adapted to each patient. Another objection to public asylums was the class of attendants found in many of these institutions, who are often secured because of their "brute force" and the cheapness of their service. Dr. Bradner thinks that the attendants and physicians in these institutions should be especially educated.

The speaker then took up the consideration of a new law proposed in Pennsylvania by Judge Brewster, providing for a jury of twelve laymen, who should judge as to the sanity of a person before his committal to an asylum. He said that a law similar to the one proposed by Judge Brewster was now in operation in Illinois. His objections to this law were that laymen were not capable of acting as judges in these cases; that there was loss of time in the treatment of acute mania, which should be promptly treated, and that it was a great injustice to the families of these afflicted persons to give such publicity to their unfortunate condition.

In conclusion, he said that the private asylums of our country will increase in number, which, he thinks, will be a great benefit to society.

Dr. Kiernan, of Chicago, and Dr. Hughes, of St. Louis, both thought that Dr. Bradner's criticism on the public asylums of this country was unjustly severe.

The next paper was upon the "Studies of Cranial Degeneracy and Aberrant Maxillary Development in the Criminal Class," by DR. G. FRANK LYDSTON and DR. E. S. TALBOT, of Chicago, Ill.

Dr. Lydston took up the part of the subject relating to cranial degeneracy, which, he said, had not been studied to any extent in this country. He believes the external conformation of the calvarium was not always indicative of the cerebral development, but in many cases it formed a very good basis for judgment. He

said that simplicity in the type of the cerebral gyri was always indicative of cerebral degeneracy. In the criminal classes the striking feature of the skull is its greater breadth and decrease in the height of the vertical index, and its asymmetry. A condition that he has noticed in the skulls of the criminal class is a peculiar appearance as though it had been twisted upon itself. He then considered the conformation of the skulls of various races, after which he exhibited a series of skulls of criminals.

In conclusion, he said that the criminal usually had a bad heredity, and in addition to the cerebral aberration in these cases there was often physical degeneracy. The most aberrant types of skulls were found in criminals of foreign birth. Another peculiarity that he has discovered is the relatively greater aberrant development of the nose among criminals than in the ordinary individual. In the majority of instances where there is defective bony development there will be found cerebral degeneracy.

Dr. Talbot took up the second part of the paper and spoke upon aberrant maxillary development in the criminal classes. He showed a number of drawings illustrating the peculiarities of the inferior and superior maxilla in skulls of criminals. He also said that in conjunction with a defective cerebral development, there was usually either a deficiency or excess in the growth of the osseous system. His studies have been very extensive upon this subject. Among the various classes of society he had found an abnormality in the growth of the maxillary bones as follows: In the insane 90 per cent. have normal maxillary bones; the Hebrew race 74 per cent. normal; of a large number of Harvard dispensary patients, 60 per cent. were normal; in idiots, 55 per cent. were normal; in the blind, 50 per cent.; and in the deaf and dumb, 45 per cent. were normal; lastly, in the criminal class, among whom only 34 per cent. were found to have normal maxillary bones.

Dr. O. Everts, of Cincinnati, next read a paper entitled "Increase and Prevention of Insanity;" after which Dr. W. H. Willing, of Philadelphia, exhibited two batteries and read a paper upon "Electro-diagnosis in Brain and Nerve Injuries."

Dr. Stephen Lett, of Guelph, Canada, read a paper upon the "Treatment of Opium Neuroses." He condemned the abrupt mode of treatment in the strongest terms, and favored the method by gradual reduction. His method of treatment is according to that of Dr. Hubbard, of Brooklyn, with a few modifications. He thinks that the "vice theory" of the opium habit should be discarded, and that it should be considered purely as a disease. He says that there is no drug that can cure this condition, and that substitutes are dangerous and should not be employed. He first ascertains the amount of opium used by the patient in twenty-four hours, and then reduces this to an equivalent of morphia, which is always substituted regardless of the preparation of opium which the patient has used. The rate of reduction depends upon the character of the case. In those cases where large quantities of opium are used the reduction is faster, while in cases where the amount used is small, the rate of decrease is proportionately slow. In a case where twenty grains of morphine are used in twenty-four hours, he reduces the amount at the rate of one grain in about three days. When the amount is reduced to one grain, three or four weeks are required before it is entirely stopped. As a result of this gradual method of treatment there is no shock, no gastric disturbance, little or no diarrhœa, no restlessness, and the sleep is good. The speaker does not favor the use of bromide of potassium, alcohol or cocaine during the treatment, but depends entirely upon nourishing food to sustain his patient's strength.

Dr. W. S. Watson, of Matteawan, N. Y., followed with a paper on "Opium Inebriety, its Legal Recognition and Treatment." This speaker advocated the same plan of treatment as Dr. Lett, with some slight modification.

Extracts from a paper sent to the Neurological Section by Dr. R. Burkart, of Bonn, Germany, on "Brain Diseases from Opium," were read by Dr. J. B. Mattison, of Brooklyn, N. Y.; following which he read a paper written by himself on "The Prevention of Opium Inebriety." This speaker spoke in the highest terms of the use of codeine and narceine, especially the former, instead of morphine. He claims that codeine has all the advantages of morphine without its disadvantages. This drug, according to the speaker, produces sleep and allays pain without inducing that peculiar effect that is so fascinating to the morphio-maniac. He does not deny that the codeine or narceine habit may be contracted, but thinks it is far less likely to follow the use of these drugs than is the morphia habit from the use of morphine.

He says that one-fourth of a grain of codeine hydrochlorate, hypodermically, or one-half of a grain of the sulphate by the mouth, are perfectly safe.

No bad effects follow the use of this drug, and it is in every way superior to morphine.

OBITUARY.

Dr. Joseph Leidy, M.D., LL.D., Professor of Anatomy and Director of the Biological Department of the University of Pennsylvania, died early on the morning of Thursday, April 30th, of uræmia and pachymeningitis.

Dr. Leidy was born in 1823, and during the early years of his life lived upon a farm, where he had the opportunity of developing his great love for the study of Nature. After having been educated in the common schools, he studied medicine in the University of Pennsylvania, and was graduated in 1844, studying anatomy in the meantime under Dr. James McClintock and Dr. P. B. Goddard. During his student days, and afterward for several years, he was an active assistant of the well-known investigator and chemist, Dr. Robert Hare, and also of Professor Horner, who then held the Chair of Anatomy in the University of Pennsylvania. Before he had studied medicine, Dr. Leidy had fully mastered the subject of botany, ample evidence of which is given in his later contributions to science. To give in the brief space which we have at our disposal anything like a complete biography of this celebrated man would be absolutely impossible. During the fifty-seven years that he was a member of the medical profession he contributed to science no less than eight hundred papers, which were at once widely diverse and eminently scientific. While he was known to medical

students as a professor of human anatomy, his intimate knowledge of the formation of man's body was as nothing to his wonderful knowledge concerning all forms of animal life, both microscopical and otherwise. In addition to being a comparative anatomist, he was *facile princeps* palæontologist of the United States. His investigations upon this subject provided the doorway through which all other researches have been carried on. Beginning at a time in the history of this country when no one dreamed of the vast scientific discoveries which have since been made in the West, he not only determined correctly the nature of all those fossils, as well as other remains of extinct species which were brought to him, but prophesied with singular fidelity that other discoveries would confirm his opinions, although years might elapse before they were made.

One of the most remarkable facts in regard to the career of Dr. Leidy, was the invariable confirmation of his views. Frequently a space of twenty or thirty years would elapse during which he would remain steadfast in his beliefs against all criticism, and come out victor in the end. As a helminthologist, Dr. Leidy occupied a position in the first rank, and was so regarded by Deising, of Vienna, the highest authority on that subject, who practically devoted his whole lifetime to this one subject—the study of helminthology. One of Dr. Leidy's most important contributions to this branch of zoölogy was his discovery of the Trichina spiralis in the pig, which Leuchart admits suggested to him his discovery of trichinosis in man. Dr. Leidy's study of the parasites affecting the lower animals was equally as thorough as were his researches concerning the animals affecting man, and the intestinal canal of the cockroach and centipede and other similar forms of life were the subject of a number of contributions to the publications of the Smithsonian Institution. In addition to the intimate knowledge of the subjects which we have mentioned, Dr. Leidy was one of the first authorities in the United States upon the subjects of geology and mineralogy. His knowledge of the value of precious stones was that of an expert. His power of observation and of remembering what he had seen were almost beyond the comprehension of ordinary individuals. It is said of him that on one occasion a rare plant was brought to him which had been found in Chester County, Pa., and that after examining it with some care, he remarked that he remembered to have found one of the same character thirty-five years before on the south side of a small strip of woods, which proved to be the position from which the second plant had been brought.

While Dr. Leidy did not make great epoch-making discoveries, his scientific work and the hundreds of minor discoveries which he made have placed him head and shoulders above all other naturalists which America has ever produced, and it is doubtful if the world has ever seen a man who was so thoroughly equipped and so intimately in touch with so many branches of natural science as was the subject of this sketch. In addition to the American honors which were conferred upon him, Dr. Leidy was a member of a large number of learned societies in Europe, and as long ago as 1865 was elected to membership in the following foreign bodies: Imperial Society of Naturalists, Moscow; Imperial Leopold Charles Academy of Sciences, Jena; Royal Zoölogical and Botanical Society, Vienna; Royal Academy of Sciences, Münich; Royal Bohemian Society of Sciences, Prague; Biological Society, Paris; Geological, Zoölogical, and Linnæan Societies, London; Natural History Society, Dublin.

The most prominent contributions from the pen of Dr. Leidy are as follows: *Flora and Fauna within Living Animals*, 1 vol. 4to., pp. 67, plates 10, 1853; "Freshwater Rhizopods of North America," *U. S. G. Survey of the Territories*, Wash., 1879; *Ancient Fauna of Nebraska*, 1 vol. 4to., pp. 126, plates 24, 1853; *Memoir on the Extinct Sloth Tribe of North America*, 1 vol. 4to., pp. 68, plates 16, 1855; *Cretaceous Reptiles of the United States*, 1 vol. 4to., pp. 135, plates 20, 1865; *Extinct Mammalian Fauna of Dakota and Nebraska, together with a Synopsis of the Mammalian Remains of North America*, 1 vol. 4to., pp. 472, plates 30, 1869; *Contributions to the Extinct Vertebrate Fauna of the Western Territories*, 1 vol. 4to., pp. 358, plates 37, 1873; *Description of Vertebrate Remains from the Phosphate Beds of South Carolina*, 4to., pp. 52, plates 5, 1877. The greater part of his more important works have been issued through the Smithsonian Institution, the Academy of Natural Sciences of Philadelphia, and Hayden's United States Reports of Geological Surveys of the Territories.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MAY 9, 1891.

BRADLEY, G. P., *Surgeon.*—Detached from "Mohican," and placed on waiting orders.

T. C. WALTON, *Medical Inspector;* GEORGE A. BRIGHT, *Surgeon;* and J. M. STEELE, *Passed Assistant Surgeon*, ordered to Naval Academy, to examine applicants physically for admission.

DICKSON, S. H., *Surgeon.*—Ordered to the "Constellation."

LEACH, PHILIP, *Passed Assistant Surgeon.*—Detached from the Naval Academy, and ordered to the "Constellation."

RUSH, W. H., *Passed Assistant Surgeon.*—Detached from the "Saratoga," and await duty to sea.

ATLEE, L. W., *Passed Assistant Surgeon.*—Detached from Navy Yard, League Island, and ordered to the "Saratoga."

BROWNELL, C. D. W., *Assistant Surgeon.*—Ordered to Navy Yard, League Island.

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ORIGINAL ARTICLES.

NAPHTHALIN IN TYPHOID FEVER;

Based on Its Employment in One Hundred Consecutive Cases.

BY L. WOLFF, M.D.,

PHYSICIAN TO THE GERMAN HOSPITAL OF PHILADELPHIA; DEMONSTRATOR OF CHEMISTRY, JEFFERSON MEDICAL COLLEGE, ETC.

WITH the recognition of the bacterial origin of typhoid fever and the seat of the characteristic microörganisms in the glandular apparatus of the lower part of the ileum, the endeavor to combat bacterial growth at its peculiar location and thereby to prevent the formation by it of the toxic agents which give rise to the typical symptoms of that disease, intestinal antisepsis soon became a factor in the therapeusis of this affection.

Carbolic acid, thymol, iodine, mercuric and mercurous chlorides and iodides were employed for this purpose, and, with the exception of calomel, were soon relegated to the oblivion they seemed to deserve. That calomel alone remained and proved its worth in practical application, is probably due to its insolubility and its gradual conversion only in the lower part of the small intestines, where it no doubt forms antiseptic compounds. It appears, therefore, that the methods of intestinal antisepsis were not so much at fault as the selection of the proper antiseptics. Carbolic acid, iodine, thymol, naphthol, corrosive sublimate, etc., are evidently taken up in the upper part of the digestive tract, or early in the digestive act converted into compounds which promptly find their way into the absorbents. In the extreme dilutions in which they can circulate in the blood, even though they were not also promptly eliminated, they cannot possibly exert a sterilizing action on the soil of the bacterial growth. Deducing from the undoubtedly favorable action of calomel in enteric fever, the choice for an intestinal antiseptic should fall upon one that is not readily soluble nor taken up by the absorbents, until it had reached that part of the intestines which is the seat of the etiological microbe. It might be asked, Why not employ calomel, if its action has proven so beneficial? To which must be responded, that its continued use for any length of time is certainly impossible, both on account of its irritant action on the intestinal mucous surfaces, as well as the early-appearing constitutional symptoms, which must at once contra-indicate its employment.

Rossbach, of Jena, some time ago (*Berliner klin. Wochenschrift*, 1884, No. 42) recommended naphthalin as deserving of trial as a suitable intestinal antiseptic agent in typhoid fever, arguing in its favor the good results obtained with it in different enteric affections, both catarrhal and ulcerative. He claimed for it that by its use he was enabled to disinfect the enteric intestinal canal, and that the fæces under its use passed perfectly odorless, or with only a predominating odor of naphthalin. He further claimed for it insolubility in water, acids, and alkalies, also strong antiseptic powers; and that while toxic in its effect upon insects, it certainly did not exert, even in large doses, toxic or deleterious action upon man. Also, that it was almost always readily tolerated by the stomach, not disturbing the appetite or digestion, and that albumin never appeared in the urine after its use. The same author quotes also the statistics of a number of cases of typhoid fever which had been treated with naphthalin and which had terminated abortively inside of two weeks, while in the late cases it had exerted no marked influence over the disease. In another paper on the same subject (*Berliner klin. Wochenschrift*, 1885, No. 14) he treats further of the action of naphthalin and its untoward effects, and attributes the latter largely to the use of the impure drug or to the idiosyncrasy of the patient. Some of the unpleasant results were strangury, and even præputial œdema observed in two tuberculous patients. He already points out the dark coloration of the urine under its use, and thereby admits the elimination of some of it by the kidneys. He claims that the rare untoward symptoms were by far outweighed by the decided beneficial results obtained by its use. In his remarks on this subject at the Congress for Internal Medicine at Berlin in 1884, Rossbach also states that if taken internally it was to some extent eliminated with the urine, either as naphthalin or converted into naphthol, which Baumann and Herter declared was not the case in dogs to which had been given five grammes of naphthalin. They held, therefore, that it must pass off as naphthalin in the aqueous vapors, but did not explain the condition of the organic sulphates under its use. It was stated by Rossbach that the urine of patients taking naphthalin was preserved from decomposition for weeks; also, that Schlescher had obtained a naphthol reaction in such urine.

E. Sehrwald, of Jena, in an exhaustive paper on

"Naphthalin in Typhoid Fever" (*Berl. klin. Wochenschrift*, 1889, No. 19), from experiments made in the laboratory of the medical clinic of Professor Rossbach, reviews the uses and action of naphthalin, and especially its effect on bacterial life in artificial cultures. He inclines to the view that naphthalin possesses inhibitory action on the development of microörganisms, and though he admits that at ordinary temperature this is very little, he claims to prove that it is increased by greater surface contact, such as might be produced by shaking and peristaltic action; also, that at the temperature of the body its action on the microörganisms is much more intensive, and that it acts most probably in its gaseous state by inhibiting the growth and is destructive to the life of the germs. It is therefore more energetic on aerobic bacteria and those propagating on solid soil than on the microörganisms vegetating in fluids. He seeks to explain in two ways the beneficial results from naphthalin as an intestinal antiseptic, by the constant peristalsis and the elevated temperature, which causes the fluids thereof to come constantly in contact with the gaseous naphthalin so generated. He states that while the microbes of the fæcal masses are by this antiseptic reduced to one-half without the body, they are reduced to one-third or one-fourth in it, and after evacuation very soon again reach the former proportion. A most significant deduction made by Sehrwald is that naphthalin acts even more forcibly on the typhoid bacilli, reducing them to one-tenth their quantity, and reducing them still further when they have been already reduced by the exhibition of calomel. On account of the mixed character of the infection of typhoid fever and the more energetic manner in which naphthalin acts on the bacilli thereof, and the control of calomel over some of the other bacteria of that disease, he recommends the joint administration of the two drugs in typhoid fever.

Notwithstanding the painstaking experiments of Dr. Sehrwald and his logical deductions, the weak antiseptic powers of naphthalin appear to give no great assurance as to the probable results to be obtained by its use in enteric fever. Having for some time employed naphthalin in the typhoid fever wards of the German Hospital of Philadelphia, and having become satisfied as to its decided beneficial influence on the course of this disease, I have made a number of researches at the laboratory of the Jefferson Medical College as to its action and conversion in the digestive tract. It is hardly to be supposed that we can look for its action as being germicidal when it is at best even a very weak antiseptic. That it is quite insoluble in the fluids of the body would be another objection against its use as an antiseptic. We cannot suppose that it should prove directly antagonistic to bacterial life, but we may infer that, if it were soluble, it should permeate the tissues and transform them into unsuitable soil for microbic propagation. From Dr. Sehrwald's experiments we would look for the active typhoid bacilli in the contents of the intestines, rather than in the solitary glands and the Peyer's patches of the ileum. What we may look for in the intestinal contents are the soluble products of the pathogenic microbes over which naphthalin or any other antiseptic can have no control; whereas the factors thereof are nested in their glandular beds, propagating there at the expense of the culture soil they offer, and secreting in their destructive process the toxin which gives rise to its pathognomonic symptoms.

It seems to me that an intestinal antiseptic must be intended rather to affect the soil than the bacterium directly, as probably no chemical agent could do this in non-toxic doses. To such an agent naphthalin must be converted before it can produce a local antisepsis and be absorbed. It has been stated by Rossbach that he had given the napthalin in doses ranging from one and one-half grains to as much as seventy-five grains per day. He urges the larger doses because only with them does the naphthalin become apparent in the fæces. Why should the smaller doses not be eliminated by the bowels, and what becomes of them? To determine this I made, jointly with my assistant, Dr. M. V. Ball, a series of experiments, in which we commenced taking naphthalin in smaller doses, and gradually increasing it until we could demonstrate its presence in the stools in its pure state. We made also control experiments with the stools of typhoid patients, and found that naphthalin in doses not exceeding five grains every four hours would not appear in the fæces. We further demonstrated that in the five-grain doses the odor of naphthalin was not apparent in the exhalations of the lungs or skin, but that derivatives of naphthalin could be promptly and continuously detected in the urine. The question of the elimination of the naphthalin derivatives from the body has been gone over so extensively, and the tests are so purely chemical, that I will omit them, as they have been published elsewhere by my assistant, Dr. Ball (Prize Essay, Jefferson Medical College, 1889). I will only state that we invariably found naphthol-sulphuric acid, or rather napthol-sulphurates, in the urine. With ferric chloride they gave a red color, turning to brown, while with diazobenzol-sulphurate of sodium a beautiful red color promptly appeared. From these experiments it may be inferred that in five-grain doses or less all the ingested naphthalin leaves the body in the urine (excepting the probably small quantity escaping in vapor form). This deduction naturally leads to the question of how this conversion of naphthalin can

and does take place? It is a well-known fact that in the small intestines there is constantly found and produced more or less hydrogen peroxide, and thence it passes into the blood and even into the urine. It is also a fact that naphthalin forms directly with hydrogen peroxide a hydrate known as naphthol, which, according to its relative position, may be either of the α or β variety, and, furthermore, that the product of naphthalin is a very powerful antiseptic. It may be assumed that it is the naphthol locally produced which exerts the inhibiting power over microbic life, while the value of naphthalin rests in its being insoluble and being converted only at or near the site of the infection. That it is thence absorbed and eliminated as a sulpho-compound might lead to the question why naphthol itself should not be at once administered. This can be answered to the effect that as naphthol is soluble (about 1 to 1000), it will no doubt be absorbed in the upper portion of the digestive tract, probably little, if any, reaching the lower part of the ileum.

I have made the foregoing experiments and researches to justify my continuance with the treatment of my typhoid patients by this remedy. Before proceeding with my own clinical observations I will quote from the inaugural essay of Dr. Ludwig Wilhelm Goetze, published in the *Zeitschrift für klinische Medicin*, Berlin, 1885, in which he reports thirty-five cases of typhoid fever treated with naphthalin, of which three terminated abortively in three days, ten within ten days, and four within two and one-half weeks; a total of seventeen cases, or 50 per cent of the total number so treated. Of the thirty-five cases three died, so that the total mortality in this series would have amounted to 8.5 per cent. Of these the reporter claims that two deaths were not to be attributed to the typhoid condition, but to severe complications, leaving a mortality of 2.8 per cent. in an epidemic which was considered of a severe type.

My service in the medical wards of the German Hospital during the last three years brought to my observation a rather larger number of cases of typhoid fever than is usually met with in medical practice. While it is well known that some typhoid epidemics assume a more serious character than others, and that the death-rates vary as a consequence, irrespective of any treatment, I selected for my observations on intestinal antisepsis with naphthalin, one of the more severe, if not the most severe epidemic we had experienced for some years. The cases so treated were selected, but received the same medication, as follows: On admission, calomel with soda was administered in grain doses each three hours for six hours, or until its laxative effect forbade its further use. This was immediately followed by gelatin capsules containing five grains each of purified and finely-powdered naphthalin every four hours, alternated only with a few drops of dilute hydrochloric acid. No other medication was permitted, excepting chemical antipyretics and cold sponging for hyperpyrexia. The diet consisted of milk, alternating with meat broths containing raw eggs; stimulants were administered as required.

I submit herewith a *résumé* of one hundred consecutive cases treated in this manner. An analysis of this series of cases shows the following results: Of the one hundred patients fifty-six were males and forty-four females; their average age was 24.7 years; the mean duration of the febrile period was 24.4 days: this may seem large, but when we take into consideration that some had long sieges of fever and others had two or three relapses, it explains the reason for such a protracted average fever period. A notable fact is that in the one hundred patients so treated sixteen cases ran an abortive course, *i. e.*, they defervesced before the end of the second week. Only three of the patients had intestinal hæmorrhage, which, however, in two of the cases occurred shortly after they were transferred to me and subjected to naphthalin treatment. The total mortality was 10 per cent. Two cases were brought in comatose and never rallied, and died within three days after admission. Of the complications resulting in death was one with facial erysipelas, one with glosso-pharyngeal paralysis, one with acute pulmonary phthisis, one from heart failure in consequence of valvular heart lesion. Of the other four remaining fatal cases, two died respectively within four and five days after admission, never having responded to treatment. I may, from the foregoing, fairly assume that the mortality of these cases under naphthalin treatment did not exceed 2 per cent. It is not probable that the total death-rate from typhoid fever in general hospitals will ever be reduced much below 10 per cent., as severe cases admitted late in the disease, or with complications which no longer admit of treatment at their homes, will under any treatment prove more or less fatal.

To understand the value of my figures here given I must refer to the death-rate of typhoid fever at the German Hospital of Philadelphia for the five years prior to the epidemic during which I made the observations the results of which I have herein submitted. According to the statistics of this hospital the death-rate from typhoid fever in 1884 was 23.4 per cent.; in 1885, 11.4 per cent.; in 1886, 20.4 per cent.; in 1887, 17.4 per cent.; and in 1888 it was 13.2 per cent.; while the one hundred cases which I have here reported followed in 1889 with a total death-rate of 10 per cent. As a comparison made of the death-rates under various

treatments I can quote no better statistics than those of Liebermeister, in Basle, which he gives as follows:

On the indifferent plan, 27.3 per cent.; on incomplete antipyretic treatment, 16.2 per cent.; on complete antipyretic treatment, 10.2 per cent.; no specific treatment, 28.7 per cent.; calomel treatment, 12.4 per cent.; iodine treatment, 12.9 per cent.

As a result of my observations I would also state that naphthalin has no direct influence on the fever temperature; it is often surprising, however, how soon after its continued administration a lysis will take place and a normal temperature will be reached. That this is due to the inhibiting effect of the drug on the morbid process and its etiological elements may be inferred from the fact that if in such cases the medication be discontinued directly on defervescence, a renewal of the febrile process will generally take place. It was at first a matter of some surprise that the relapses were so frequent, there being nine cases showing renewal of fever and some of them had even two and three relapses. After that, I continued the naphthalin for some time after complete defervescence, and the frequency of relapses was greatly diminished. In only one of the cases did I find continued nausea and persistent vomiting, necessitating an interruption in the naphthalin treatment, which, however, was resumed subquently without further trouble. One of the favorable results of naphthalin treatment is the control it exerts over the excessive and exhausting diarrhœa. After its continued use for some time it may even be found necessary to administer laxatives or exhibit laxative enemata to overcome resulting constipation. There seems to be no repugnance on the part of the patient against the drug, unless it is administered in suspension instead of in gelatin capsules. The appetite is in no manner impaired by it, and I have had no occasion to observe any irritation of the uropoëtic apparatus with the purified naphthalin I invariably employed. I have carefully watched its effect on the heart, but found that it is in no way impaired or depressed by it.

In conclusion, I may sum up my deductions as follows: That the treatment of typhoid fever should always be under two heads—one for the infection and the other for the toxæmia resulting therefrom. There seems to me no room for doubt that at the onset of the disease the administration of naphthalin may inhibit the development of the pathogenic microbes to such an extent that the fever itself will run an abortive course. Further, that at any period of the disease we may restrict the growth of the etiological factors in a measure, that an over-production of the chemical toxins may be prevented, and thus the fever run a mild course. This is possible, in my estimation, only with chemical agencies which, innocent in their immediate action on the organism, will be chemically altered in the lower part of the digestive tract, and there exert their antiseptic action on the soil of the pathogenic microörganisms. Of these agencies naphthalin and calomel are the principal representatives, and of the two, naphthalin must have the preference for its non-toxic character. Whether naphthol directly administered in keratin-coated pills be preferable, I am not prepared to state, although I know that, if ingested in suitable quantities for intestinal antisepsis, it produces local irritation, reflex vomiting, and diarrhœa. The gradual but continued development of naphthol from naphthalin *in situ* seems more calculated to produce intestinal antisepsis without the accompanying irritation of masses of naphthol.

Although I feel justified from the foregoing in recommending the use of naphthalin for the treatment of the specific infection of typhoid fever, I do not wish it to be understood that I recommend it as the sole treatment of this disease. No chemical agent so far known can destroy the characteristic toxins without also destroying life, and naphthalin can in no manner influence the already absorbed typhotoxin nor combat the symptoms it produces. For the toxæmia there is no specific remedy save speedy elimination and the stimulation of the vital organs against it. Though not within the province of my paper, I would say that, in my opinion, this is best obtained by cold baths; but I should think myself as much remiss to depend upon combating simply the specific poison in the body without attempting to limit its production, as I would be by attending to intestinal antisepsis alone without regard to the dangerous symptoms which the absorbed poison has already produced.

ACUTE DELIRIUM: ITS ETIOLOGY, PATHOLOGY, AND CLINICAL FEATURES, AS STUDIED AMONG THE INSANE.

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BEFORE proceeding to a more general consideration of the features embodied in acute delirium, it may be wise to offer an explanatory note bearing upon the title of this paper. We would call attention to the fact that when we say acute delirium, as studied among the insane, inference naturally draws one to conclude that the cases studied were actually insane. That they were so stamped by reason of a legally qualified commitment, which placed them for treatment in a hospital for the insane, is a fact beyond dispute. But this alone, and I say it with all respect to those charged with the

examination and commitment of such cases, does not make them insane in the true sense of the word, and in the sense that insanity should be strictly accepted and rigorously held to. We are getting too prone to magnify and overestimate mild and comparatively harmless deviations in the mental operations of an individual from what we conceive that person's normal psychological standard to be. We do not claim that the "curve of health," lately discovered by Dr. Oliver Wendell Holmes, can be so deflected or extended as to include in the normal variations of man's physical welfare such a disease as acute delirium. It would be worse than folly to go that far. We do, however, venture to assert that pure and simple cases of acute delirium, characterized by their usual symptoms, abrupt in invasion, destructive in tendency, and evincing the many profound physical manifestations of disturbed organic life, should not be held to constitute a true form of insanity. We submit as a matter of fact that the objective symptoms in cases of acute delirium vastly outweigh the subjective. While the objective symptoms are sufficient to fill out a long list, the subjective ones are confined to a low delirium in nearly all cases. This low, unceasing, monotonous delirium should not be, in itself alone, sufficient to constitute insanity. Typhoid and many other febrile conditions are characterized by a like delirium, and yet the stigma of insanity, so considered by the ignorant, is not forced to rest on such cases. Acute delirium, with its concomitant symptoms, often goes under different names, of which acute delirious mania constitutes one of the most frequent designations employed by alienists when such cases are received into hospitals for the insane.

To the student of diseases of the human mind, the condition of acute delirium is especially interesting. A fair percentage of acute cases admitted into hospitals for the insane is composed of such. It is also known that the rate of mortality among this class of cases is high. We have often been astonished to see how quickly a strong, vigorous, and hearty individual, whose disease may only have existed twenty-four or forty-eight hours prior to admission to the hospital, becomes within a week or ten days a victim to the ravaging powers of this disease. All, of course, do not die; many recover; others lapse into a chronic condition in which they evince mental symptoms pathognomonic of no distinctive type of insanity, but sooner or later pass into secondary or terminal dementia. In THE MEDICAL NEWS of January 31, 1891, Dr. James Hendrie Lloyd invites us to a new field of reflection concerning the causative elements of acute delirium. He is inclined to the opinion that the disease is due to an infectious process or the action of some irritant poison. In a proportion of cases we fully agree with him, and even do so more readily in those cases in which we can directly detect a culpable source of infection, as, for example, in puerperal cases; for here we have no embarrassment, as a rule, in ascribing to the proper cause any manifestations of delirium or erratic mental action, should it occur within the first month, or even later, after childbirth. We also know that certain exopathic poisons, in gaseous or microscopic form, when taken into the system, produce distressing bodily derangements, attended in some instances with marked delirium. Dr. John B. Chapin, in the same issue of THE MEDICAL NEWS, calls attention to the fact that sewer-gas emanations from old privy vaults and other impure exhalations give rise to bodily and mental symptoms, some of which are characterized by acute delirium. Such agencies constitute exopathic chemical poisons, and it is generally quite easy to establish, in such instances, the causal relationship between the disease and its proximate cause. On the other hand, we frequently encounter typical cases of acute delirium, the causes of which we find it impossible to determine. In many of these cases we can readily exclude, so far as a careful and exhaustive inquiry will enable us to do, every possible cause, or source of exopathic infection, and so we are left to assume that the cause for the disease comes from one or the other of the following sources: either from the action of endopathic chemical causes, which arise either *sui generis*, or have their origin as the result of new compounds formed within the economy, or from causes purely psychological. The psychological causes of morbid mentality have long been recognized. Credit has always been given to excessive exercise of the mental faculties when deeply disturbed by grief, shock, or remorse, for producing unwholesome deviation of mental action and oftentimes fixed insanities. How mental action deranges itself, or the source from whence it comes, is as interesting a question as "Why does not the stomach digest itself?" If we could once establish the essential method of production of mind, or its mode of origin from the highest types of the bio-plastic elements of the brain, or if we could understand and demonstrate the probable or true chemical metabolism that takes place in the cells of nervous matter when mental force is being evolved, then we would be in a far better position to formulate some basic principle upon which diseased mental action in general goes on. We are inclined to the opinion, though our conceptions may be totally erroneous, that the chemical constituents of nerve-tissue suffer some deleterious chemical change when that nerve, or nervous tract, is required to transmit currents of thought, so to speak, which are excessively intense,

imperative, and morbid in character. We furthermore believe that the duration of application of these intense and essentially poisonous impressions, determines whether the mental symptoms that supervene shall be lasting in character, or whether suitable remedial agencies, or the beneficent action of that great healer, Time, will suffice to eradicate them. From among the number of cases of acute delirium that have been admitted to this hospital during the past four years I have selected the following five. These five cases embrace the operations of three distinct causes—distinct so far as the source from which the causes *a priori* arose. The first was evidently due to an infection derived from without, the delirium in this case following an attack of la grippe. The second was due to puerperal sepsis, in conjunction with intense psychological disturbance. The third was purely psychological. The fourth originated in consequence of a specific infection, operating conjointly with religious excitement; while the fifth is shrouded in much doubt as to its real cause. It occurred in a woman six months after the birth of her child, the mother being in the meantime in good health, both mentally and physically.

Case I.—J. H., a native-born American, thirty-five years of age, married, and a laborer by occupation. His illness began on February 17, 1890, with an attack of la grippe, at that time epidemic in the country. The attack began two weeks before his admission to the hospital, and he had been delirious four days when admitted; delirium set in on the tenth day of the disease. Prior to his admission his delirium was quite active, being attended by a good deal of motor excitement. Soon after admission the character of his actions underwent a material change; he refused food and drink; his tongue became dry, brown, fissured, and hard, and sordes covered the teeth; breath very offensive; eyes restless and wavering in expression; the lines of the face drawn and prominent. It was impossible to fix his attention for a moment; he was never quiet, tossing to and fro on the bed, constantly muttering unintelligible sounds. He was put upon supporting and stimulating treatment, which had to be carried out entirely by artificial means, by the use of the stomach-tube and rectal injections. He gradually failed, and died on the eighth day after his admission to the hospital. An autopsy held some hours after death revealed no special pathological changes. Along the median line of the dura a number of hæmorrhagic spots were noted, the dura being somewhat thickened in the same locality, and slightly adherent just here to the pia. The vessels of both the dura and pia were greatly congested. The puncta vasculosa throughout were plainly marked. The brain weighed forty-eight ounces, and its substance was in good condition.

Case II.—C. McC., a young married female, twenty-six years of age, a native of Ireland, the mother of three children, and a silk-finisher by occupation. Prior to this illness patient had always enjoyed robust health; she had no trouble, either during or after any of her child-bearing periods, dependent upon this condition. During the two and a half weeks prior to her admission to the hospital she was a constant attendant at mission meetings held in the Catholic church of which she was a member. She attended these meetings closely, and appeared deeply interested in them. The first evidence of mental derangement was noticed one evening upon her return from the service, when she was "excited" and "talked strangely." The next morning she appeared normal, and went about her household duties as usual until 9 o'clock, when the first marked outbreak occurred. She raved about "Christ and crucifixion," and continued in this excited, delirious condition for four days, when she was admitted to the hospital. Shortly after admission she became less active in speech and action. The delirium continued, and was characterized by all its usual symptoms. She persistently refused food and medicine, talked incessantly about religious matters, and never slept unless under the influence of some hypnotic. There was a slight elevation of temperature, the skin was hot and dry, the lips and tongue deeply furrowed with brownish-colored fissures, sordes covered the teeth, and her breath was very offensive. Her face wore a restless, apprehensive, and, at times, a pleading expression. Emaciation rapidly appeared, and she continued to fail, and died from exhaustion on the sixteenth day after the beginning of her disease. An autopsy held ten hours after death showed intense general congestion, involving both conjunctivæ, the scalp, the membranes covering the brain, and all the internal organs. The pia and arachnoid were intensely congested, the former being adherent to the convolutions of the posterior frontal and postero-parietal regions. This adherence was most marked along the median fissure. The vessels, cord, medulla, pons, and corpora quadrigemina were also congested. Brain-substance of normal consistence.

Case III.—The one due to purely psychological causes was that of J. A. T., a young native-born American, twenty-three years of age, and a stenographer by occupation. He had been ill four weeks when admitted to the hospital suffering from a pronounced type of melancholia. He was brought here on account of his trouble suddenly taking an unfavorable turn. He became much worse twenty-four hours after admission, and rapidly passed into a condition of acute delirium. The cause of his primary mental depression, as given, was that he had wronged a young woman, and thought he would be forced to marry her. Prior to this misdeed he had never had any mental trouble whatever. About three years before this he had an attack of typhoid fever, and experienced the usual delirium. From the beginning of the delirium after his reception here he steadily failed. All physical powers seemed to actually melt away. Motor and mental activity seemed to go on under the highest pitch of intensity. His fancy was most active. He dreaded being captured and tried for a wrong, and constantly exercised his motive powers to flee from his environments. His

efforts in this direction soon ceased on account of complete physical exhaustion. He was put upon a stimulating and nutritious diet, administered every two hours, and choral was used in twenty-grain doses to overcome restlessness and insomnia. Later on, heart stimulants were called for. All treatment, however, proved futile, and he died on the eighth day after his admission into the hospital. An autopsy was not permitted.

CASE IV.—J. D. C., a man, twenty-eight years of age, native-born American, married, an engine-driver by occupation. The cause of illness in this case was held to have been an infection derived from without, operating conjointly with a psychological disturbance, springing from religious excitement. "Malaria" was given as the agent of infection, from the fact that the patient worked in a low-lying, swampy district, known to be miasmatic. Religious excitement, consequent upon his attending a "revival," was also regarded as semi-responsible for his subsequent delirium. When admitted here, on the 21st of last January, he had been ill for a week. The symptoms at that time constituted the more ordinary signs of simple melancholia. Two days after admission his condition greatly changed. He suddenly became very aggressive toward other patients, went dancing and surging around the ward, and evinced some hallucinations of sight and hearing. Four days later this condition terminated as suddenly as it began, and he passed into a state of active delirium. The following are some notes of the case taken from the house records:

February 5. Delirium active; forcible in his bodily movements; tries to escape from the room whenever the door is open; mutters constantly, giving expression to semi-intelligible words bearing upon his previous life.

7th. No improvement; appetite very good; is given milk, whiskey, and eggs in combination every two hours. Eyes restless and apprehensive in expression; tongue dark-brown in color, dry, and deeply fissured; lips parched, cracked, and swollen; slight elevation of temperature; delirium continues.

9th. Improving; less restless; takes food better; restraint unnecessary; sordes disappearing from the teeth; tongue more moist and delirium subsiding; takes plenty of food.

15th. Able to be up and around the ward; all sensory and motor excitement gone; has fallen into a sullen, fixed mental state, that seems liable to become chronic. He will not speak, and has a positive aversion to being disturbed for any purpose whatever. Manifests a vicious tendency at times toward other patients.

He is still here, in fine physical condition, but I have little hope of the final restoration of his mental faculties.

While his delirium was just as active, and the objective symptoms just as prominent, as in some of the preceding cases, I am inclined to attribute the cause of his restoration, as far as it has progressed, to the great amount of nourishment he was forced to take, to the mixed character of the cause of his illness, and to his remarkable powers of physical endurance.

CASE V.—D. B., a married female, twenty-five years of age. She has one child, which was nearly six months old at the time of the mother's admission here. This patient's mother was insane, though nothing is known of the character of her insanity. The factor of heredity, combined with the puerperal state, and the hard work of the mother as sole attendant of her child, can doubtless be laid down as the causes responsible for the present acute attack. She was brought here on February 19th last, five days after the beginning of the disease. General excitement marked the inception of the attack. Shortly after admission she manifested symptoms of acute delirium, though not of an active type. Motor symptoms predominated. She could not be kept in bed; would get up and walk aimlessly about the ward, muttering incessantly to herself. Her attention could not be fixed. Her face, tongue, eyes, and lips, in fact, every feature, bore the symptoms of acute delirium. She would not eat, and on feeding her with the stomach-tube the extreme sensitiveness of the stomach, probably through reflex irritation, caused everything to be promptly rejected. She was then fed by nutritious enemata. A copious injection of warm water was first given, and after this had passed away eight ounces of milk, whiskey, and eggs were given three times daily. She was fed in this manner for about ten days. Insomnia for awhile was controlled by morphia, hypodermically; but at the end of a week she slept without it. Immediately she began to improve, and has continued to do so since. At present she has some timid delusions, if I may so express them. By this I mean delusions about which she is apparently in doubt as to whether she should or should not speak. I hope these will soon fade entirely away.

STRICTURE OF THE RECTUM, WITH THE REPORT OF A CASE.[1]

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STRICTURE of the rectum may be congenital or acquired. The congenital form is usually described under the title of malformation, and will not be considered in this paper, which is intended as a study of the acquired forms of stricture. These strictures may be classified as follows: 1, Those due to pressure from outside the bowels; 2, spasmodic; 3, non-venereal; 4, venereal; and 5, cancerous. A tumor of any kind in the pelvis will not infrequently

[1] Read before the Medical Society of the Missouri Valley, Omaha, Neb., March, 1891.

so press upon the rectum as to obstruct its calibre. There has been a great deal of discussion by the authorities as to whether we ever have a spasmodic stricture. The majority of them, however, have great doubt as to its existence, especially if the constriction is above the sphincters. A stricture which disappears on anæsthetizing the patient is a so-called spasmodic stricture. Non-venereal strictures are divided into the dysenteric, inflammatory, and traumatic. Dysenteric ulceration is one of the most frequent causes of stricture, which, when it is extensive, sometimes results in multiple strictures. A stricture may be the result of proctitis, acute or chronic, when sufficiently severe to cause changes to take place in the coats of the rectum. A simple traumatism may lead to the same result, either by causing ulceration and cicatrization, or by exciting a chronic inflammation in the sub-mucous and connective tissue. The more prominent kinds of traumatism which may result in a stricture are operations upon hæmorrhoids, foreign bodies, applications of strong acids, kicks and falls, some surgical operations, and injury produced by the head of a fœtus during childbirth. There is another form of stricture which may result from a thickening of the folds of mucous membrane which are normally present.

Venereal strictures may be divided into the cicatricial and neoplastic. Venereal ulcerations which by subsequent cicatrization are capable of producing stricture are the chancroid and later syphilitic ulcers. The chancre and mucous patch may be excluded, since their influence in causing stricture is rather a matter of surmise than of proof. There is a form of venereal stricture which does not undergo ulceration primarily—this may be called neoplastic. In this class we find the gummata, the ano-rectal syphiloma, and a later manifestation, in which we have a deposit of new material in the rectal wall as a result of the inflammatory condition.

In studying the pathological anatomy of stricture there are several points to be observed, for changes will be found not only in the stricture itself, but above and below it, and in the surrounding parts. The mucous membrane at the point of constriction will usually be found destroyed, and the connective tissue increased in quantity, thus increasing the thickness of the rectal wall. Later, the mucous membrane will show ulceration in all stages, from a simple congestion in some points to a complete destruction in others, due probably to retained fæcal matter. The ulceration may extend up and down the bowel, or cause a perforation.

There is a low form of peritonitis which frequently accompanies stricture. The rectum below the stricture seldom remains unchanged. Hæmorrhoids, vegetations, excoriations, fistulæ, and cutaneous tags of greater or less size usually follow in close proximity as a result of the discharge from the disease above.

Stricture proper is not met with so frequently as is supposed. The fact that a patient complains of constipation, or passes ribbon-like stools, is in nowise a clear indication of stricture, for we have such symptoms from ulcers of the rectum and sometimes from an irritable sphincter. Stricture is more common in the female than in the male. Bryant found, in 48 consecutive cases, that 32 were in women. Of this number 20 were under thirty years of age, 15 being women, who were mostly, if not all, syphilitic. Twenty-two were over forty years old, one-half being men, and most of them of a cancerous nature.

Allingham in his work reports seventy cases. Of this number sixty were women. Out of the seventy, thirty-five had undeniable syphilis, while five had symptoms (but not decisive) of having contracted the disease, which leaves thirty who had undoubtedly never contracted syphilis. He found that about the same proportion of males had syphilis. From these statistics it can readily be seen that stricture is very frequently a result of syphilis.

One of the first things to direct our attention to stricture is a continual uneasiness about the rectum, which is usually followed by pain attending the passages; great efforts at stool are attended with unsatisfactory results; constipation is present in the early, and diarrhœa in the later stages, after ulceration has commenced; lumpy stools, containing pus, blood, and mucus, are passed; there is great straining at stool, with a sensation as if the bowel had not emptied itself; the stools are tape or ribbon-like, and as the stricture becomes smaller we have complete stoppage and dyspeptic symptoms. A stricture may or may not obstruct the entire calibre of the rectum. The most extensive disease is found in cases of syphilitic deposits, syphilitic sclerosis, or dysentery. In making the diagnosis, first get a complete personal and family history; follow this up by getting the subjective symptoms; after this comes the digital examination, by which you will nearly always detect the stricture, for most of these troubles are located in the lower part of the rectum. If the stricture is high up we have different symptoms. The patient will complain of pain in the abdomen, groin, and down the limbs, and obstinate constipation, with occasional diarrhœa. A stricture in this locality is very difficult to diagnose, and it must be looked for with great care, for I distinctly remember perforating the rectum while trying to make a diagnosis with a rubber bougie. The case, fortunately for me, did not die. If bougies are used, the flexible, soft rubber one should be chosen, and then used with *great caution*. I prefer a long, soft rubber tube to the bougie. Dr.

Kelsey says that he knows of no other way than this, and by exploratory laparotomy, in which a stricture in this locality which cannot be felt by external manipulation can be certainly diagnosed.

The prognosis in stricture is unfavorable so far as a cure is concerned. All we can hope to do in a great many cases is to prolong life by keeping the stricture in such a condition that the patient may have a reasonably comfortable stool.

The treatment of stricture should be local, constitutional, medicinal, and operative. The first question to determine is, Has the patient syphilis or not? If you have reason to believe that your patient has syphilis, put him on the mixed treatment at once; yet you should be careful, and not use the iodide of potasium and mercury indiscriminately. Should you do this it is possible that you will make as many mistakes as those who think all strictures are of a cancerous nature, and direct their treatment accordingly. Cicatricial tissue, though the result of specific disease, is beyond the reach of specific treatment, but where you see the case in the early stage much improvement will be gained by a thorough course of mixed treatment, by which means a gummatous deposit or a syphilitic sclerosis may be checked. Mercury, in the form of ointment, may be used, but it will be found very irritating if there be much ulceration. There are many ways in which the comfort of your patient may be increased without recourse to operative treatment, and these should not be overlooked in the surgeon's eagerness to operate. Careful attention to the diet is needed, which, so far as possible, in conjunction with other liquid and semi-solid food, should be milk in large quantities. The bowels should move at least once a day. The mineral waters, Rochelle or Glauber's salts, will be sufficient in most cases to cause an action. Purgatives are contra-indicated because of the straining and tenesmus which accompanies their action. The general health should be looked after, and cod-liver oil used if indicated. The most important thing, however, is rest in the recumbent position, and to allow your patient to walk as little as possible. When the ulceration is deep and contraction has commenced, you should be guarded about the prognosis; yet a good deal of hope may be instilled into your patients if they will give themselves up to your treatment for a greater or less length of time. If they are indiscreet they may undo in a day what you have gained in a month. One of the best ways of applying medication to a stricture is by means of the pile-pipe, which has a large base, gradually tapering toward the apex, and perforated with numerous holes. You fill the reservoir in the base of the tube with ointment, and then by turning the screw in the base force the remedy out on all sides equally. Allingham's favorite prescription is the following:

℞.—Bismuthi subnit. . . . . ℥j.
Hydrarg. subchlorid. . . . . ℈ij.
Morphiæ . . . . . grs. iij.
Glycerini . . . . . ℥ij.
Vaselini . . . . . ℥j.—M.

Sig.—Use in pile-pipe.

This is a sedative application, and I think a good one. The subacetate of lead, opium, and belladonna, in the form of suppositories or ointments, will be found serviceable. All sorts of astringents may be used; zinc, copper and nitrate of silver will all do good in some cases; occasionally fuming nitric acid is beneficial. By these means, combined with gentle dilatation, the life of a patient may in many cases be prolonged in comfort. If your patient complains of abdominal pain, put on hot fomentations. This, in a general way, covers the medicinal treatment.

The various surgical procedures at our command are the following: Dilatation, divulsion, colotomy, and proctotomy or rectotomy.

Before operating on a stricture, impress upon the patient the fact that he has a very serious trouble, and that the probabilities are that he will never be entirely well. If you choose to operate by dilatation use the soft rubber bougies. The dilatation should be intermittent, and not constant, because of the ease with which the rectum becomes irritated and peritonitis follows the application. Dilatation may be aided many times by nicking the edge of the stricture before passing the bougie. The one selected should be of a size to pass the stricture readily without much pain, and if there is any doubt in your mind as to the size to use, authorities say choose the smaller, the object being to cause absorption by gentle irritation. The treatment by gradual dilatation has been superseded by more radical measures. Some favor rapid divulsion; I do not, for I have seen some very serious complications following that operation. If the stricture is of a cancerous nature excision is indicated. Excision may also be resorted to in cases of benign strictures low down with happy results. I performed this operation once in a case of benign stricture, and the patient made a splendid recovery. Colotomy is to be performed in cases where the stricture is almost complete, and causes abdominal distention. I have assisted in performing the operation three times with very good results. The lumbar region is the usual site chosen, and the left side, for anatomical reasons. Should the obstruction, however, be high up the bowel, it may be performed on the right side. I have never witnessed a colotomy in the inguinal region. Allingham, who has performed

a great many of these operations, has performed inguinal colotomy but twice, both operations being infants, where they were not successful. Colotomy was performed upon ten of the patients referred to in the first part of this paper, by Allingham, and he says most of them did well. Five or six were still living at the time of writing. The main drawback to this operation is the disgust shown by the patients to having a false anus in the lumbar region. This feeling gradually wears off, and Allingham reports that two of his female patients married, after having the operation done, and made good wives. In case the stricture should heal after operation the false opening can then be closed.

I wish now to refer to Verneuil's operation, or, if you chose, proctotomy. This is often done as a substitute for colotomy. The operation consists in dividing the whole stricture, from its upper edge down to the coccyx and through its entire depth, thus forming a deep drain through which all discharges flow freely, the incision heals up, the ulceration ceases, and the stricture is sometimes cured. The operation may be done with the knife, with Paquelin's cautery, or the écraseur. If the knife is used, and a free gush of blood follows, pack the rectum with antiseptic lint. If the cautery or écraseur be used there will be very little hæmorrhage. By Verneuil's operation we got through-drainage through the triangular-shaped wound, and, at the same time, we get complete rest from the division of the sphincters. I think this the most practical and humane way of treating a bad case of stricture of the rectum. I remember in one case to have seen night-sweats arrested in forty-eight hours, and the patient rally, eat and drink, and get well from that moment. I have recently performed the operation three times, and the results were very satisfactory indeed. I wish in this connection to report the last case in which I performed this operation:

Mrs. P., referred to me by one of my professional neighbors, widow, aged thirty-five; good family history; has been long troubled with her bowels; never passed fæces of natural form; always in small, broken lumps, or sometimes had the ribbon-like stools; often passed blood, mucus and pus; has been emaciated for some time, but said she was perfectly well, except the bowel trouble. She dates her present trouble back two years, at which time she was operated on for hæmorrhoids by one of the famous quacks of our city, who cures all rectal troubles without the knife, cautery, or ligature, presumably by the laying on of the hands.

On examination I found an almost complete stricture about one and a half inches above the anus. I could not pass a No. 4 soft rubber bougie through it, and it was exceedingly painful to the touch. I found the edges of the stricture in a ragged condition from the severe ulceration. I placed the patient under chloroform, and with the sharp blade of a proctotomy knife passed to the upper edge of the stricture, I divided all tissues down to the coccyx; had very little hæmorrhage; dressed the wound with dry dressings, and in a few weeks it had entirely healed, and she could have a comfortable stool.

In conclusion, I wish to mention electrolysis, which it is claimed does good in the treatment of strictures of the rectum. Dr. Kelsey says, so far as producing absorption is concerned, it is a delusion, but he has seen some good from its counter-action, combined with rest and dilatation.

TWELFTH AND GRAND AVENUE.

MEDICAL EXPERT TESTIMONY.

BY JOHN J. REESE, M.D.,
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THE recent Schmidt criminal trial at Media, Pa., has excited no little interest in the community. To the medical profession its chief interest and importance centres in the very remarkable discrepancy, not only between the expert testimony for the prosecution and that for the defence, but likewise in some important particulars in the evidence offered by the State's experts. Probably no case on record in the annals of criminal jurisprudence affords a more striking illustration of the imperfect and unsatisfactory character of our present system of so-called "expert testimony."

Here we have the spectacle of four highly respectable practitioners of from ten to thirty years' standing—one of whom had, during an experience of twenty years, performed many thousand post-mortems, and examined over 300 cut throats, and whose opportunities and studies in the lines of anatomy, pathology, and microscopy have been unequalled—all uniting and testifying to certain appearances presented by the wounds upon the dead woman's neck, but not agreeing among themselves in relation to certain other appearances, the examination having been made within a day or two after the death.

Among the points specially noticed and testified to by these gentlemen, were the situation, the nature, the direction, and the extent of these wounds. They all coincided in the opinion that certain of the injuries—those which penetrated to the vertebræ—were inflicted by a stabbing, or *thrusting*, of the lethal weapon, whilst the others were undoubtedly of the nature of incised wounds. And, further than this, two of those witnesses expressed their opinion that the right carotid artery had been cut, or partially severed, by a wound inflicted on the right side of the neck, which had extended around to the front of the throat.

Now, these are points of purely anatomical signi-

ficance, about which one might suppose there could be no possibility of doubt or opinion. But what a remarkable spectacle was presented to the court and assembled crowd of on-lookers when the defence produced before their astonished gaze the very neck of the dead woman, which had been dissected from the dead body by their experts, and which now, after nearly four months' interval, they were permitted to offer in open court for the inspection and personal handling of each juryman!

It appears that the body was secretly exhumed by the defence some weeks after burial, and without the knowledge or authority of the court or the prosecuting attorney; and that during the interval their experts made their several investigations, and now, on the witness stand, these experts, in number and professional standing and ability the equals of their opponents—three of them well-known professors in our medical schools—came forward and declared that the right carotid artery was *not cut at all*, but was uninjured, and that "the wound at the back of the neck" was only superficial, and did *not* penetrate to the bone. In relation to this latter assertion, it is to be remarked that it is somewhat misleading, as it implies that the other experts had asserted to the contrary; whereas, these latter had distinctly stated that it was the *second* wound of the neck, counting from the back (not the one farthest back), that had the nature of a stab, and which penetrated to the spine, and had probably caused the fatal shock.

Now, let us ask the question, what impression is such an exhibition of so-called "expert testimony" calculated to produce on the minds of the court and jury, and of the legal profession generally, to say nothing of the popular sentiment? Is it not likely to very much weaken the respect and confidence in all such testimony, and to bring it into disfavor, much to the detriment of justice? But, in passing we may remark, What impression would the average juryman gain by looking at, and even *handling*, an anatomical specimen nearly four months old, taken out of a jar of alcohol before his eyes? Would he not be very apt to both *see* and *feel* pretty much as the expert should describe and manipulate the parts before him?

This diversity in expert testimony, especially in criminal trials, is calculated to occasion much doubt and uneasiness in the mind of the medical jurist, and, as already observed, its frequent occurrence has greatly prejudiced the courts and counsel against all medical expert evidence. That this should be the result is, of course, greatly to be regretted, and the question that presses for earnest consideration is how to remedy this mischievous condition of things? This question has occupied the thoughts of distinguished men in both the professions of medicine and law, but no practical advance or improvement has resulted so far, at least in our country.

One thing is very certain: if *all* the experts were equally well grounded by experience, ability, and education, on the special points involved in the case before them, and if they were all equally honest and truthful, and supposing the question was simply one of *facts*—anatomical, pathological, or chemical—which could easily be demonstrated to the eye or touch, it would seem to be impossible that there could be any difference of opinion, since truth is undivided and uniform. Universal consent and agreement *must* be awarded to *facts*, if proved to be facts. Even theories and speculations, deduced from these facts, ought not to differ widely, if at all, with experts equally well educated and equally well equipped for their service, and equally honest, truthful, and unprejudiced.

But it is probable that under our present system of *voluntary* experts, taken pretty much at random from among the crowd of doctors, many of whom lack the needed experience and training, we shall never attain to that perfect harmony and unanimity of expert testimony so desirable, especially in criminal trials. The true remedy, as it appears to us, is to change the system radically, so as to make the medical expert *a State officer*—appointing so many for each State, divided off into judicial districts. Let these "experts" be physicians of known and approved moral and professional character; not novices, but thoroughly trained and experienced in all the details of anatomy, pathology, chemistry, and microscopy, not omitting also surgery and gynecology. They should devote their exclusive time and attention to their State duties, relinquishing all practice as physicians, and, of course, they should be amply compensated for their services. The expert should possess a laboratory properly furnished in which all needful experiments could be performed. He should be present at every criminal trial within his district, and sit with the judges as the *amicus curiæ*, ready at all times to give his expert opinion in cases requiring it. This opinion, be it observed, should be formed and sustained only after thorough previous examination, *made by himself* (perhaps assisted by others) of all the points connected with the case, such as (supposing it to be a homicide case) the examination of the body and surroundings where it was first discovered; the thorough autopsy; the toxicological examination, if poisoning be suspected; the microscopic researches for blood and seminal stains; for hairs and fibres of fur, and for other matters; also the full details in cases of infanticide, fratricide, rape, and legitimacy. He should further be prepared, either in his individual capacity or as a member of a regularly constituted commission, to give an expert opinion in cases of lunacy

or of alleged insanity in a prisoner in a capital case.

The above is an outline or sketch of what we conceive to be the true office and position of the medical expert. It will be recognized by many of our readers as taken in the main from that adopted and practised for many years in Prussia, and with so much satisfaction. It ought not to be difficult to engraft this admirable system upon our criminal jurisprudence. It would certainly challenge the approval of both the professions of law and medicine. One practical difficulty might seem to present itself: How should such "State experts" be appointed? One thing is very positive at the outset: the appointment should be entirely kept out of the sphere of politics. For this reason it would be extremely unsafe to entrust it to the Legislature; and probably, for the same reason, it would be better not to leave it in the hands of the Governor. Therefore, it might be deemed the wisest course to leave the appointment with the Supreme Court of the State, which might make it, after proper deliberation and inquiry, upon the recommendation of the leading physicians of the different judicial districts. This appointment should be for life or, "during good behaviour." It ought not, under any circumstances, to be subject to the caprice or dictum of any new judge who might come upon the bench subsequent to the appointment. The incumbent should only be removed "for cause."

If the above plan could be carried out in our State the following signal advantages would be attained: *First*. It would insure the presence and work of a recognized expert in every important criminal cause. *Secondly*. It would put an end to the disgraceful "war of the experts," which has excited so much ridicule and contempt, both in and out of court. This it would do by entrusting the whole case (so far as it pertains to expert testimony) to the State expert, who is sworn to conduct the whole necessary examination in all its details, without fear or favor, for either side; absolutely impartial; having no pecuniary compensation or other expectation to bias or tempt him to act as a partisan for either the prosecution or defence. Everything here must, of course, depend upon the absolute confidence reposed in the State officer by both sides. Given such confidence, no further or additional expert testimony would be required or deemed necessary; there would be a quiet and satisfactory acquiescence by both sides in his opinion given on the witness stand. But, if from any cause the defence should elect to have, *in addition, their own* expert witness, the above arrangement need not offer any objection. As a matter of fact, however, we are of the opinion that very few *voluntary* experts would care to measure lances with or oppose the State expert, always supposing the latter to be as near perfection as we would have him to be. If the former witness be "a good man and true," he would in all probability agree with the State's witness; but if he should differ with him, the strong probability would be that his testimony would be overbalanced by the authority and weight of the other, supported as it would be by his recognized experience and official character. *Thirdly*. It would create much greater confidence in the community in the decisions of the court and jury in criminal trials. At present there is a widespread feeling that these decisions are very materially influenced by the diverse opinions expressed by the medical experts of the opposite sides. This feeling would then be laid at rest. *Fourthly*. The expense incurred in criminal trials would probably be diminished, certainly not increased, by the adoption of the above proposed plan. The defense would be entirely relieved of all expenditure for expert testimony, unless they choose voluntarily (and, as we have shown, unnecessarily), to incur it. When we consider the number of homicide trials occurring every year in our populous districts, and the great expense incurred by the State in the payment of its different expert witnesses, it is believed that the aggregate amount would probably exceed the salaries deemed proper for the recognized State experts. These salaries need not necessarily be the same for all the appointees. Those holding the position in districts of country thickly populated, and requiring more constant attention to duty, would be likely to receive a higher compensation than others whose duties would be less onerous and exclusive. Doubtless, all the working details of the plan above sketched out would soon be satisfactorily adjusted if only the plan itself could be adopted. It is certainly much to be desired that this subject should receive from the proper authorities that consideration to which it is entitled.

CLINICAL MEMORANDA.

TOXICOLOGICAL.

Two Cases of Nutmeg Narcosis.—The following cases of nutmeg narcosis may be of interest as showing the alarming, if not fatal, result of the aromatic, if taken in large quantities.

The drug was taken in both instances by women residing in a house of questionable character, and with the object of producing abortion. The first case took one and a half nutmegs. As the symptoms were not alarming, no medical aid was summoned; but twenty-four hours later, when I was called to see the second case, the first gave me the following history:

Case I.—One and a half nutmegs were powdered and taken in half a glassful of hot water. Two hours later the patient experienced severe burning pain in the stomach,

which continued one hour longer and was followed by a dreamy, half-unconscious condition, giving way to complete unconsciousness, which lasted six hours. She was then aroused by one of the inmates of the house violently shaking her. This procedure was necessary at short intervals for several hours. She then began to vomit, when she was given whiskey by her friends. Her recovery was so complete that when I was called to see her companion, twelve hours later, there was no evidence of the condition remaining.

CASE II.—As the quantity taken by the previous patient had not had the desired effect, my second patient concluded to take twice the amount, which was done in the same manner. Three nutmegs, being ground, were taken in hot water. About two hours later she experienced severe burning pain in the epigastric region, some nausea, but no vomiting. One hour later, or three hours after the aromatic had been ingested, she became entirely unconscious and was still in this condition eight hours later, when I was called. The appearance of the patient when I first saw her was alarming, to say the least. It was with the greatest difficulty that she could be aroused at all, and then only sufficiently to get an incoherent muttering. Respirations were 9 per minute, both expiration and inspiration being greatly prolonged; pulse 100 and feeble; temp. 100° F. Head buried backward in pillow; eyes turned upward and bulging and pupils evenly dilated; the extremities were cold; both the nails and lips were purple, showing venous stasis; there was relaxation of the sphincter of the bladder and rectum. She was sufficiently aroused by our efforts to empty the stomach with the stomach-pump, which was found impossible owing to the clogging, to allow the administration of an emetic of fifteen grains each of powdered zinc and ipecac, which thoroughly emptied the stomach in about twenty minutes. Strychnine and brandy were then freely given. Consciousness returned slowly, and at the end of twelve hours complete recovery took place.

In neither case did the drug have the slightest tendency to produce abortion, though the patient assured me she had known it to do so. This statement I am inclined, however, to doubt. The powerful narcotic symptoms observed in Case II., with the history of less marked symptoms in Case I., where a smaller quantity had been taken, prove, I think, without doubt, that nutmegs, if taken in larger quantities, say four or five of them, may produce death from paralysis of the respiratory centre.

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ORIGINAL LECTURES.

THE HEART: ITS MURMURS, THEIR DIAGNOSIS AND TREATMENT, AND THE ACTION OF THE CARDIAC TONICS AS A CLASS.[1]

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LECTURE I.

GENTLEMEN: To-day I propose to discuss with you the subject of cardiac lesions, commonly known as valvular affections of the heart, and at a subsequent clinic the physiological and therapeutic action of the drugs commonly regarded as cardiac tonics and stimulants. But, first of all, it is absolutely essential that we should understand accurately the anatomical position and physiological mechanism of the heart, and also the pathological lesions following the mechanical defects in the action of this organ. We shall then be able to diagnosticate these disturbances accurately, and apply our therapeutic measures upon a thoroughly rational basis, with scientific accuracy, and not empirically or because somebody said so, and without a well-grounded reason.

In order to obtain a clear conception of, and to readily recognize, the various cardiac murmurs, we must have a thorough knowledge both of the exact position of the organ and of the mechanico-physiological laws governing its mechanism. This is especially true in regard to those murmurs which are located at the mitral orifice, where there is no organic lesion of the valve-segments.

We must become thoroughly familiar with the topographical arrangement of the heart. If, as is usually the case, the anatomical position of the heart is taken from frozen sections, it will appear upon a lower plane than that which it actually occupies during the life of the individual, and unless due allowance is made for this sinking, which occurs with all the viscera, and especially with the contents of the thorax, after death, great errors in diagnosis will, of necessity, be committed.

During life, too, the heart cavities and great bloodvessels are distended with blood, naturally causing the viscus to occupy a higher position in the chest than would be the case under other circumstances.

While the patient is alive, therefore, the heart may be said to occupy a triple oblique position in the thoracic cavity, or one corresponding to a line drawn from right to left, from above downward, and from behind forward —a position which will have for its central axis a line represented by transfixing the body from behind forward, from above downward, and from right to left, starting posteriorly at the sixth dorsal vertebra, passing through it and the chest cavity, and coming out on the anterior surface of the chest in the fifth intercostal space three and a half inches from the median line of the sternum.

The base of the heart will correspond to a line drawn obliquely across the sternum from the first intercostal space of the left side to the second intercostal space of the right side, and the apex of the organ will be found just within the anterior chest-wall, behind the fifth intercostal of the left side at its junction with the sixth rib, three and one-half inches from the median line of the sternum.

The left side of the heart is the most posterior; this is especially true of the left auricle, which is also the most inferior portion of the organ lying adjacent to the anterior surface of the eighth dorsal vertebra deep down in the space between the diaphragm and the spinal column. Exception, however, may be taken to this statement by some anatomists, for they make that part of the right auricle which extends down to join with the inferior vena cava, as it passes through the foramen quadratus, the most inferior portion of the heart, but when taken as a whole, the auricular cavity of the left side is decidedly upon an inferior plane to that occupied by the right

[1] A series of lectures delivered at the New York Post-Graduate Medical School and Hospital.

auricle or the left ventricle. As a result of this posterior and inferior position of the left auricular cavity, the current of blood passing from it into the left ventricle naturally flows from behind forward, from right to left, and slightly from below upward, or directly across the chest cavity; but never from above downward. The course of this current corresponds to a line drawn from behind forward through the eighth dorsal vertebra, through the

FIG. 1.

chest, and coming out in front at the junction of the fourth rib and its corresponding costal cartilage. I have named this line, for convenience, the left auriculo-ventricular axis. From this description you will readily see that the tricuspid valve is situated well to the posterior limit of this left auriculo-ventricular axial line. All murmurs, therefore, that occur at the left auriculo-ventricular orifice are produced and transmitted by the current of blood passing in one or the other directions of this axis.

For convenience the etiology will be taken up later with the descriptions of the murmurs.

The pathological lesions that can be produced, in connection with valvular defects in the heart, are most completely illustrated by starting with a mitral incompetency and following it through all the succeeding steps.

The first mechanical change in the mechanism of the heart, acting as a pump, is the leakage of a certain amount of blood back from the left ventricular cavity into that of the left auricle. This causes a small amount of depletion in the general arterial system, and a filling of the left auricle from the left ventricular cavity at the same time that the normal flow is coming in from the lungs, through the pulmonary veins. As a necessary sequence the left auricle will be over-filled and caused to dilate. The auricular cavity will now contain an abnormally large volume of blood, which necessitates a certain amount of compensatory hypertrophy on the part of the muscular wall of the auricle, to enable the organ to free itself from this unduly large volume of blood within its cavity.

When this step in the process has been accomplished, the left ventricle will have an abnormally large volume of blood thrown into its cavity, which will cause in turn a moderate amount of dilatation and hypertrophy of the left ventricle. This primary hypertrophy enables the left ventricle to throw the requisite quantity of blood into the aorta and to keep up the normal arterial tension, and at the same time sustain the backward leakage, which is constantly increasing the dilating force brought to bear upon the left auricle, and being resisted by its compensatory hypertrophy, until, finally, the blood is forced back upon the pulmonary system of vessels, and a certain amount of engorgement of the capillaries in the lungs is developed and maintained. This condition necessarily increases the amount of work which has to be accomplished by the muscular power of the right ventricle.

The constant over-distention of the pulmonary capillaries keeps up a perverted nutritive condition of the lungs, which, in connection with the impeded circulation, gives rise, after a time, to the development of new connective-tissue formations, and a general interstitial thickening of the pulmonary structures. Accompanying this there is always a change in the coloring-matter of the blood, which causes it to be decomposed and deposited in the newly-formed tissue, giving to it a distinct reddish-brown color.

This peculiar lesion of the lung is known by the name of brown induration of the lungs, sclerosis, cirrhosis, pulmonary induration, or the chronic interstitial pneumonia of heart disease. The first is, perhaps, the most accurate, anatomically speaking, for it describes the macroscopic appearances perfectly, while the last is probably the least accurate, with the exception that it points to its etiology. This process, however, is not inflammatory in the strict limitation of the process, as it is now understood.

This increased volume of blood in the pulmonary circuit is followed, as we have already found, by hypertrophy of the right ventricular wall, and so long as this compensatory enlargement can be maintained the mechanical workings of the heart, practically speaking, are performed with sufficient effectiveness; the only mechanical and physiological defect being a leakage at the mitral orifice and the pulmonary engorgement, both of which, mechanically speaking, are compensated for by the augmented power of the heart.

The right ventricle, however, is dependent upon the aortic tension for its nutritive supply, and as the arterial pressure is not raised above the normal standard, but tends to fall below, the right heart is apt to degenerate. The fall in the blood tension, together with the impaired oxygenating capacity of the lungs, and the generally deteriorated nutritive state of the system will, in turn, diminish the nutritive supply distributed to the right side of the heart, and the compensatory hypertrophy of the right ventricle is not fully sustained, the muscular fibres composing the organ progressively degenerate, and its cavity becomes dilated, until the segments of the pulmonary valve are pulled apart and prevented from completely closing the pulmonary orifice.

The engorged pulmonary vessels now force the blood

back through the incompetent valve of the pulmonary orifice, into the right ventricular cavity, or, stated in other words, the ventricle cannot free itself, and its cavity is filled from the two sides—from the right auriculo-ventricular opening and from the pulmonary artery. As the tricuspid valve is never competent, and the venous tension behind it is commonly rated as a zero pressure, while the pulmonary arterial tension is now abnormally high, the aspiration force of the respiratory act and the pumping action of the right heart is quickly overbalanced. The blood, of necessity, flows back into the right auricle and into the superior and inferior vena cava with each contraction of the right ventricle. This regurgitation into the general venous system is made apparent by the pulsation of the jugular veins synchronously with the cardiac systole.

The result of this backward pressure upon the venous system is to cause, at first, a marked hepatic congestion, and there is a similar condition throughout the whole entero-hepatic circuit. The liver, in consequence, becomes enlarged, and the hepatic cells in the centre of the acini become stained brown, similar to the lungs, from the same kind of decomposed blood-coloring matter being deposited in the protoplasmic mass composing the hepatic cells. This condition is known as a pigmented or nutmeg liver. If this hepatic engorgement lasts for a considerable time, a false nutritive condition is established in the liver, and a slight amount of newly-formed connective tissue is developed, together with some fatty infiltration of the hepatic cells composing the outer portion of the lobules of the gland. This form of hepatic sclerosis is usually limited in extent, and never assumes the characteristic appearances of an alcoholic cirrhosis. It is a microscopic rather than a macroscopic change. In this way a moderate amount of hepatic sclerosis and fatty infiltration of the glandular cells of the liver is added to the well-marked and extensive congestion and pigmentation of the organ.

As a result of this entero-hepatic engorgement, both the intestinal and hepatic digestive functions become impaired, and general nutrition is poorly sustained.

When the liver has reached the limit of its expansibility, the kidneys and venous system at large commence to be positively engorged. The congestion of the kidneys causes a development of new connective tissue in the interlobular structures, or a renal sclerosis is developed, and without the intervention of any inflammatory action. After a time the epithelial cells of the uriniferous tubules become smaller and granular, until, finally, sufficient damage is produced in them to cause albumin and casts to appear in the urine, which before was only scanty and high-colored as a result of the impaired nutritive condition of the system and the local renal engorgement.

Finally, all the veins of the body become over-filled, and dropsy of the lower extremities or a general anasarca is developed.

To overcome this universal vascular engorgement and œdematous condition of the system at large, the action of the left ventricle is increased, or its muscular wall hypertrophied, but owing to the general nutrition being so much impaired, this secondary hypertrophy of the left ventricle, as it is called, is rapidly followed by dilatation of its cavity, and death of the individual, being, as it were, the last act in the circle of events, and that, too, one of short duration.

With the other mechanical defects implicating the aortic and mitral valves, the round of changes will be of a similar character, but starting at a different point, some to reach the maximum quickly, as is the case in regurgitation at the aortic valve when due to organic and progressive lesions, or more slowly, as is frequently witnessed in the case of an aortic stenosis.

With these pathological changes clearly in mind, you will readily see that the chief object in treating cardiac lesions must be direted toward the development of a higher nutritive state of the system, and the development of an increased working-power in the muscular walls of the various cavities composing the heart, until the mechanical defect is fully compensated for, and the vascular congestion removed, or reduced to the minimum.

The causes of organic obstruction, giving rise to a mitral direct—stenotic—murmur at the bicuspid orifice, are acute endocarditis with roughening of the valve segments by out-growing vegetations, or congenital malformation; or chronic endocarditis, with or without calcareous depositions, all of which narrow the mitral orifice, and prevent a free egress of blood from the left auricle into the left ventricle.

The common law which governs the seat of development and the transmission of all cardiac murmurs may be stated as this: The abnormal sound, called a murmur, is heard with greatest intensity just beyond the point of its development, and is transmitted from this point forward or backward in the direction of the current of blood, which, together with the valvular defect, is the cause of the murmur. Forward and backward, in this instance, refer to the current of blood and not to the antero-posterior positions of the body.

With a narrowing of the bicuspid or mitral orifice, which is due to an organic lesion, an abnormal sound is produced in the line of the left auriculo-ventricular axis, by the obstruction to the normal current of blood in its passage from the left auricle to the corresponding ventricular cavity, and has often been called a presystolic murmur. This is true so far as the ventricle is involved, but, in reality, it is a systolic murmur of the auricle, and is developed at the height of a rigorous auricular contraction. If, however, for any reason the muscular power of the auricle becomes enfeebled, the murmur may entirely disappear, to be again reëstablished when the contractile power of the muscular tunic of the auricle is regained. This transitory character of the mitral direct murmur has led some to deny its existence, but frequent and well-defined clinical observations of cases with a distinct mitral direct murmur, substantiated by the post-mortem findings, prove, beyond a doubt, that such a murmur is produced and heard; that by it we are enabled to say with certainty that a bicuspid stenosis exists during the life of the individual, and that it will be found when the necropsy is performed.

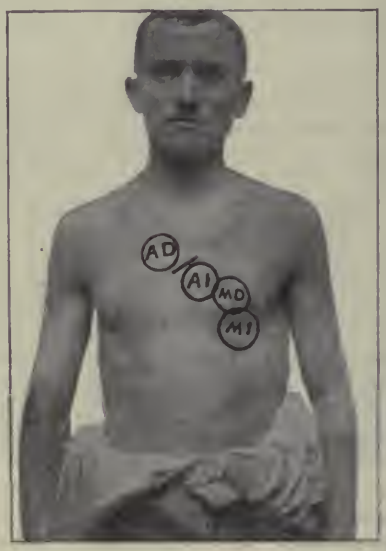
This abnormal sound is also called a mitral obstructive or direct murmur. The latter is the term which I have chosen to employ in the chart before you, and also in the diagrams upon the patient.[1] It is so named be-

[1] Ring lettered M D, Figs. 1 and 2.

cause the blood which produces the murmur is flowing in the normal direction against an abnormally small or roughened auriculo-ventricular inlet. This murmur, which is dependent upon these two conditions, is heard with greatest intensity just in front of, or over, the left ventricle, at the point where the left auriculo-ventricular axis strikes the anterior surface of the chest-wall, or over the junction of the fourth rib and its adjoinining costal cartilage.

It is a high-pitched sound, and is practically not transmitted, being heard over the limited præcordial area, confined within the circle marked M D in Figs. 1 and 2. It is usually of short duration, but may be somewhat prolonged, if the obstruction be very great and the time

FIG. 2.



occupied by the auricle in emptying itself be considerable. Occasionally a case may be examined in which the murmur is prolonged, and more widely transmitted and heard outside this limited zone, but the nature of its production is such that, under ordinary circumstances, it is more apt to be limited, both in regard to its duration and in the area of its transmission.

The etiology of the mitral indirect or regurgitant murmur at the bicuspid orifice, which has been developed from organic lesions, is acute and chronic endocarditis, with their resulting changes; rupture of a segment of the valve; rupture of a chorda tendineæ, and acute and chronic dilatation of the left ventricle, all of which tend to prevent a complete closure of the left auriculo-ventricular orifice during the ventricular systole. To this list congenital malformations might be added, but these abnormalities are more likely to cause a direct than an indirect murmur, or the two together, rather than a simple and single mitral regurgitant murmur.

With an incompetency of the bicuspid orifice due to organic changes, the abnormal sound is produced by the blood being forced back from the left auricle against the normal current. The mitral indirect murmur is distinctly heard at the apex, within the circle marked M I on the chest of our patient and in the chart.[1] It is transmitted to the left, and is usually lost at the anterior axillary line, but is heard with equal intensity posteriorly at the superior border of the eighth dorsal vertebra, or between this point and the inferior angle of the scapula, as indicated in the posterior view of our patient.[1]

According to the ordinary law of the production and transmission of cardiac murmurs, already given you, this murmur should only be heard posteriorly; but occurring as the result of the left ventricular contraction, or where the left ventricle and heart, as a whole, are becoming solid bodies, and impinge more forcibly against the anterior and bony chest-wall, which is also a dense body, they together obey the general physical law of transmission of sound by dense bodies, and bring

FIG. 3.

the sound distinctly to the anterior surface of the chest-wall, within the circle lettered M I in our chart and on the patient's chest.[2]

In my early days as a student of medicine we were taught that a systolic murmur at the apex, or one heard within the circle lettered M I in the chart and on our patient, if transmitted to the left and heard distinctly behind at the ring lettered M I, Fig. 3, always indicated an organic lesion of the valve guarding the mitral orifice. This statement, however, I have found frequently does not hold true at the necropsy examination, and still less frequently so at the bedside or in the clinic.

A functional obstructive murmur at the mitral orifice is often heard in cases where there is considerable aortic insufficiency. The blood regurgitated from the aorta into the left ventricle rapidly fills the lower portion of the cavity, and floats up the inferior, or, at least, one of the bicuspid segments, too quickly against the incoming current of blood from the left auricle, and produces an obstruction, which, at the height of the auricular contraction, gives rise to a short, but quick, sharp, and decided obstructive or mitral direct murmur. This abnormal sound is differentiated from one due to organic narrowing at the valve by its disappearance where the

[1] Ring marked M I, Figs. 1 and 2.

[1] Ring marked M I, Fig. 3.

[2] Ring lettered M I, Figs. 1 and 2.

heart's action is stimulated, its working power increased, and the amount of actual regurgitation diminished, or, in part, compensated for by a prolonged systolic act on the part of the left ventricle, and a diminished diastolic pause.

Murmurs due to organic changes at the bicuspid orifice have been pretty thoroughly understood for a long time, but that condition in which positive and indisputable evidence of mitral insufficiency is obtained upon physical examination during the life of the patient, and later the necropsy revealing a perfectly normal and competent valve, and the absence of any left ventricular dilatation, is not generally understood nor described.

The etiology of this class of murmurs has been in doubt for a long time, and has given rise to an endless amount of discussion *pro et con*—some, in fact, have gone so far as to doubt the diagnostic value of physical signs in connection with cardiac disturbances, on account of this contradictory evidence between the living and dead subject. The difficulty, however, is not so much with the rational and physical evidences, as it is with the interpretation placed upon the signs and symptoms presented by each case. My experience, which has been somewhat large, both at the bedside and clinic, and at the post-mortem table, has been such that I am convinced that we are justified in saying, that when the rational and physical signs presented in connection with cardiac valvular disease are correctly expounded, our diagnosis will be accurately confirmed in the vast majority of instances; when it is not, the fault is with the interpretation placed upon the symptoms presented.

This functional regurgitation at the bicuspid orifice producing a mitral indirect murmur, is the abnormal sound which is of the greatest importance on account of its frequent occurrence, and because it is so often mistaken for a sound due to positive organic changes. This murmur has been explained by an over-powerful contraction of the left ventricular wall, causing an over-closure, and a forcible sliding of the valve-segments upon one another, and thus producing a sound; but while this might hold true in a few instances, it is not sustained, in the majority of cases, by the necropsy findings. To have friction enough to cause so loud a sound would necessitate a roughening of the valve, and this would lead to positive thickening of the leaflets. This, however, is not the case; for at the necropsy the valves are found to be perfectly smooth, thin, and absolutely free from any lesion. The physiological signs also disprove this theory, for a murmur produced by too tight closure would not give rise to any leakage or regurgitation of blood at this orifice, and consequently there would be no distinct murmur heard posteriorly, as is the general rule.

A sound heard at the apex circle, with and after the first sound of the heart, not transmitted nor heard behind, might justly be attributed to such a condition, and frequently we do meet with just such cases, in which there is a distinct intra-ventricular systolic hum or murmur, caused by over-vibratory tension of the bicuspid segments, and their attached chordæ tendinæ, dependent upon excessive muscular activity. But with this abnormal sound there is no leakage at the left auriculo-ventricular orifice, thus ruling it out of the regurgitant class of lesions and murmurs. Those cases in which a positive murmur is heard in front, over the mitral indirect area, and in which the murmur is transmitted to the left, and is heard posteriorly with equal intensity, near the junction of the seventh and eighth dorsal vertebræ, or midway between these bones and the inferior angle of the left scapula, and where the necropsy reveals no organic lesions in the segments of the bicuspid valve or its attachments, and where there is no dilatation of the left ventricular cavity, but in which the gross appearance of the valve and of the heart itself is normal, are conditions of special interest to us from a clinical and practical standpoint.

If we stop for a moment and consider the anatomico-physiological mechanism of the heart, the explanation is easy. As is well known, the ventricular wall is composed of seven distinct layers of muscle fibres, or for convenience and simplicity they may be considered as four. We have, connected with these layers, two sets of papillary muscles, one springing from the anterior and the other from the posterior wall of the ventricle, to which the bicuspid segments are guyed by their chordæ tendinæ. Where everything works in unison, the two segments of the valve float toward the auricular cavity, and their margins are brought into juxtaposition at a given point, and held there by the equal and synchronous contraction of the two sets of papillary muscles and the tension of the attached chordæ tendinæ. In this way the auriculo-ventricular orifice is perfectly closed and regurgitation absolutely prevented.

If, for any reason, the innervation of the heart is unequally distributed to the different papillary muscles, or the muscular layers become unequally nourished, their unity of contraction is disturbed, and instead of this perfection of action just described, one set or layer of muscles contracts more forcibly or more quickly than the other, and the papillary muscles shorten irregularly and unevenly.

When the ventricle contracts, this result is developed: one segment or the other, failing to stop at just the exact point to meet its opposite, is forced on into the auricular cavity, while its opposing fellow-segment is drawn more completely into the ventricular cavity; consequently, instead of complete closure of the orifice, an actual gap or insufficiency is produced, just as perfectly as if a piece of the valve was wanting. Through this opening a positive escape of blood from the ventricular to the auricular cavity takes place, which gives rise to all the physical signs of an organic insufficiency with regurgitation. The temporary results are the same as if there existed positive and irreparable defects. The rational signs are also the same in both instances. If permitted to continue, the results may be the same as those developed from positively organic lesions.

Organic and functional insufficiency at the bicuspid orifice can easily be differentiated during life, not by their rational and physical signs, however, but by an appropriate plan of treatment. If the cause of the latter be a deficient innervation, by giving such remedies as will restore the nerve-power distributed to the heart, the signs and symptoms will be found quickly to disappear, all regurgitation will be prevented, and the patient will be relieved from all unpleasant symptoms. When due to defective nutrition, with a lack of, or an uneven innervation and irregular muscular action, true cardial stimu-

lation and an increased nutritive vitality will cause a like satisfactory result. If, on the other hand, the physical signs are due to positive defects in the valve, the same line of treatment will often decidedly improve the condition of the patient, but it will not cause a disappearance of the physical evidences. It may shorten the duration of the murmurs, but the abnormal sounds will be more easily and accurately recognized. In this way we can easily differentiate between the two conditions, and draw the correct deductions from the signs and evidences presented. A positive diagnosis should never be made until the results of treatment, continued for a few days, have been noted and the case examined a second or third time.

The administration of digitalis in the functional class will permit a disappearance of the murmur, as you will clearly see when we come to study, at a subsequent clinic, the so-called cardiac tonics and stimulants as a class. The continued use of digitalis may convert a functional case into one where we may have an irreparable condition.

HOSPITAL NOTES.

WOMAN'S HOSPITAL OF PHILADELPHIA.

SERVICE OF JOHN B. ROBERTS, M.D.,
PROFESSOR OF SURGERY.

Reported by MARY E. ALLEN, M.D.,
DEMONSTRATOR OF SURGERY.

Tuberculosis of the Right Kidney; Nephrectomy Attempted, but Abandoned; Death.—This patient, forty years of age, was admitted to the hospital April 23, 1890, suffering with a tumor upon the right side in the hypochondriac region.

The patient's mother died of consumption. The patient had pleurisy on the left side when nineteen years of age, from which she seems to have recovered perfectly, and then married at twenty. Two years ago the patient had pneumonia, and has never been well since, her chief suffering seeming to be dyspepsia, which obliged her to live upon liquids most of the time.

During the summer previous to her admission to the hospital she experienced, while at work, a sudden and severe pain over the region of the liver which passed down into the right leg. After this she was confined to her bed for fourteen weeks. During this time the urine was very scant and cloudy, and she experienced a burning sensation after urination. She also suffered from alternate constipation and diarrhœa, the stools, however, being only occasionally light colored. Her weight was ninety-five pounds. She had lost forty-seven pounds during the last two years, and consequently showed marked emaciation.

The tumor was about the size of a fœtal head at term, and extended backward, and became more prominent when pressure was made over the region of the kidney of that side. It was, therefore, pretty certainly determined that it was connected with the kidney in some manner. It might, however, be a distended gall-bladder full of stones, and merely raised when pressure was made over the kidney from behind. Dr. Roberts stated that should the kidney itself be involved, it might be either as an abscess of the kidney, a stone in the kidney, as cancer, or as tubercular disease.

The incision made in the semilunar line of the right side and over the most prominent part of the tumor was at first about three inches in length, but was subsequently enlarged to six inches.

This point for the incision was chosen by Dr. Roberts after consultation with Dr. W. W. Keen, who by request was present at the operation. If there was pus, of course a posterior incision was the most desirable, on account of better drainage, and the extra-peritoneal position. The uncertainties were, however, so great that the anterior opening was determined upon. As soon as the peritoneum was opened, the omentum protruded, but could not be slipped up, because it was adherent to the anterior surface of the tumor. It was, therefore, cautiously cut and torn until the tumor proper was visible. This appeared to be a thin-walled sac, full of whitish liquid, perhaps pus.

An endeavor was now made to evacuate the contents with a sharp trocar and canula of large size without success, as the liquid was too thick to run. Sponges were then packed around the tumor to isolate the peritoneal cavity, and a free incision was made, through which the thick, curdy contents were evacuated. There was more than one cavity, however, and the walls between them were too thick to allow of opening them all into one, and thus to empty the tumor entirely. Neither was it possible to break up the posterior adhesion and extirpate the kidney, though this was thoroughly tried. A clamp was, therefore, placed within the opening already made, and the peritoneal covering of the tumor stitched to the peritoneal edge of the abdominal wound. After thoroughly cleansing the abdominal cavity with filtered boiled water, at a temperature of 110°, the peritoneal edge of the wound was also stitched to the skin, so as to close all raw surfaces as far as possible, and to wait for inflammatory adhesion to take place.

It was the intention of Dr. Roberts to then incise the tumor freely and thoroughly evacuate it. Two drainage-tubes were placed within the abdominal cavity at the angles of the wound, one passing backward and the other downward, to remove any oozing that might result from the attempts at radical removal. Great difficulty was also experienced in stitching the tumor to the peritoneum, as its external walls were so thin that even the slight hold taken by the needle ruptured them in one place, and the cheesy contents began again to pour out from a new cavity. It was, however, caught on sponges, a second clamp adjusted, and the operation continued.

During the operation the patient was very feeble, necessitating the administration of hypodermic injections of whiskey, digitalis, ether, and aromatic spirits of ammonia, to prevent her from dying; she was, therefore, in a very precarious condition when put to bed, and lived only twenty-four hours after the operation.

The post-mortem examination was performed through the incision made at the time of the operation, and although she lived such a short time, union between the peritoneal surfaces had already taken place. There was no evidence of hæmorrhage into the abdominal cavity. The tumor was removed with great difficulty post-mortem, being strongly adherent to the liver, diaphragm, intestines, and spinal column, and it proved to be the right kidney, greatly distended in pockets by the

tuberculous, cheesy deposits, in some of which calculus, sand, and concretions were found.

The patient's death was due to the shock of the operation.

MEDICAL PROGRESS.

Treatment of Ophthalmia Neonatorum.—LA PERSONNE, in the *Journal de Mèdecine de Paris*, gives the following treatment for the prevention and cure of this condition. The vagina is to be washed out by an antiseptic solution before labor in order to free the birth canal from any products which may produce irritation of the eyes of the child. Immediately after birth, at the time at which the bath is given, a solution of carbolic acid in the strength of 1 : 100, or the following prescription of corrosive sublimate should be employed:

℞.—Corrosive sublimate . . . 1 grain.
Tartaric acid . . . . 2 grains.
Distilled water . . . . 8 ounces.

A few drops of this solution should be dropped into the eye.

In other cases the following may be employed:

℞.—Nitrate of silver . . . 1 grain.
Distilled water . . . . 3 drachms.

Prescriptions for Sore-throat.—According to the *Journal de Médecine de Paris*, CAPART recommends the following prescriptions in this condition. For a simple catarrhal sore-throat he advises a gargle, such as the following, to be used every hour:

℞.—Borax . . . . . 15 grains.
Salicylate of soda . . . 30 "
Decoction of althea . . . 7 ounces.
Honey of roses . . . 1 ounce.

If after using this for twelve or twenty-four hours the affection continues an astringent gargle is of value, made up as follows:

℞.—Alum . . . . . 1 drachm.
Alcohol, Powdered glycerin } of each . 3 drachms.
Distilled water . . . . 10 ounces.

In cases in which there is sore throat with herpetic spots upon the pharynx it is ordered that the patient shall go to bed and shall keep pieces of ice in the mouth, while poultices are applied externally and lemonade, strongly acid, should be administered. In these cases the following prescription should also be used:

℞.—Chlorate of potash . . . 45 grains.
Distilled water . . . . 1 ounce.
Simple syrup . . . . 2 drachms.

A teaspoonful to a tablespoonful may be given every hour, and if the patient is an adult the quantity of the chlorate of potassium may be increased. Where there is much swelling of the throat with tonsillitis of the phlegmonous form accompanied by great pain, five or six leeches should be applied back of the angle of the jaw and ice kept in the mouth. The following powders should also be administered internally.

℞.—Salol, Sugar of milk } of each . . 30 grains.

Divide into three powders and take one every hour.

Or a gargle may be employed as follows:

℞.—Salicylic acid . . . . 15 grains.
Acetate of sodium . . . 7 "
Distilled water . . . . 10 ounces.
Syrup of roses . . . . 1 ounce.

In cases in which there is a tendency to a return of the sore-throat, a gargle composed as follows is useful as a prophylactic:

℞.—Crystallized carbolic acid . . 1 drachm.
Alcohol . . . . . 5 drachms.
Essence of peppermint . . 15 drops.

Ten drops of this mixture should be placed in a half glass of water morning and night and used as a gargle.

Or the following may be employed:

℞.—Salol . . . . . 1 drachm.
Alcohol . . . . . 5 drachms.
Essence of peppermint . . 5 drops.

A teaspoonful in a tumblerful of water three or four times a day as a gargle.

The Use of Atropine in the Treatment of Localized Muscular Spasm.—Dr. W. M. Leszynsky read a paper with this title before the New York Neurological Society, February 10, 1891. The speaker reported, in March, 1884, a case of clonic torticollis successfully treated by the subcutaneous administration of the sulphate of atropine. The first case of the present series was that of a man, thirty-seven years of age, who had, three years previously, muscular spasm beginning on the right side of the neck, which developed six weeks after an abscess had been opened at the angle of the jaw on the right side. The force of the spasm was increased by mastication and closure of the jaw, and it was more active upon mental excitement. He was frequently aroused from sleep by the severity of the paroxysm. There was no complaint of pain, but only of numbness in the right lower lip. He was treated by means of medicine and electricity for four months without relief. There were well-pronounced clonico-tonic spasms affecting the right platysma, and forcibly drawing downward the fascia about the chin and the lower angle of the mouth. The clonic character of the spasm predominated, and was almost constant. The muscle was hypertrophied to nearly four times its normal size, and its outline was distinct and well-defined. There was an area of complete anæsthesia one and one-half by three centimetres at the border of the lower lip near the angle of the mouth on the right side, which extended inward upon the mucous membrane and the alveolar process of the lower jaw. The mechanical irritability of the facial muscles was well marked, and the jaw-jerk was demonstrable. There was no apparent caries of the teeth or abnormality in other portions of the body. The treatment was commenced by the application of a cantharides plaster over the affected muscle. After one week had elapsed, an injection of $\frac{1}{120}$ of a grain of sulphate of atropine was made into the platysma. On each of

the following three days an injection of $\frac{1}{100}$ grain was given, when the exaggerated mechanical irritability of the facial muscles had markedly diminished, and there was an abatement in the frequency of the spasm. Sensation was also returning in the anæsthetic area. The dose of atropine was gradually increased until $\frac{1}{48}$ of a grain was given daily. At the end of two weeks the most energetic effort by pressure or otherwise failed to produce any spasmodic action in the platysma. The administration of the atropine was then discontinued. One month later the patient reported that there had been no return of the spasm. The solution used was sulphate of atropine 1 grain to distilled water 1 ounce. One minim of this solution represented $\frac{1}{480}$ of a grain of atropine. The speaker's method was to give 4 minims at the first injection and to be on the alert for constitutional effects. Upon discovering that there was no idiosyncrasy in regard to the drug, it was administered once daily, and the quantity gradually increased from day to day until the desired effect was produced or intolerance was established. The production of severe constitutional symptoms is not an essential feature in this plan of treatment. One of the physiological effects of the drug, when given in sufficient quantity, is to paralyze the motor nerves, first affecting their trunks.

Dr. V. P. GIBNEY, on being asked for his views on the subject of the paper, said that he did not know whether the author had included in his earlier reports cases of hysterical torticollis, rotary spasm, and similar affections. He doubted whether it was the intention to include that class of cases known as spastic paraplegias. The cases which came under his personal observation were only those of functional disturbance or deformity.

Mouth-wash for Fœtid Breath.—

℞.—Water . . . . . 2 pints.
Alcohol . . . . . ½ drachm.
Borax . . . . . 15 grains.
Thymic acid . . . . 7 "

Or,

℞.—Decoction of chamomile . 10 ounces.
Glycerin . . . . 2½ "
Chlorine water . . . 6 drachms.

Or,

℞.—Peppermint water . . . 1 pint.
Aqua lauro-cerasi . . . 2 ounces.
Borax . . . . . 6 drachms.
Essence of peppermint, a sufficient quantity.

All of these mixtures may be used as gargles where the decomposition of particles of food in the crypts of the tonsils or the buccal cavities produces fœtid breath.

Treatment of Chronic Alcoholism.—ERGOLSKI reports ten cases of chronic alcoholism successfully treated by means of hypodermic injections of the nitrate of strychnine in the dose of $\frac{1}{20}$ of a grain. The amelioration in the patient's condition after these injections was constant. The dyspeptic symptoms disappeared and the patient did not desire alcohol. So complete was the action of the remedy that Ergolski regards it as almost a specific. A great advantage to be gained by the subcutaneous administration of the drug is that no irritation of the gastro-intestinal canal is produced at a time when it is apt to be affected by catarrh.—*Journal de Médecine de Paris.*

Treatment of Goitre.—According to the *Journal de Médecine de Paris*, AUERBACH has obtained an incomplete cure of goitre by the interstitial injection of osmic acid combined with massage.

℞.—Osmic acid . . . . 1 grain.
Distilled water . . . 3 drachms.

The injection of this liquid is resorted to every two days, and massage is practised daily for fifteen minutes. Iodide of potassium was also given internally. After three weeks of this treatment the tumor diminishes very greatly in size and the subjective symptoms disappear.

Vomiting of Pregnancy.—POMBRAK has employed with success menthol with sugar of milk for the treatment of the vomiting of pregnancy. He has also used tincture of iodine for the same purpose. The case in which he employed menthol with advantage was that of a highly nervous young woman suffering with chlorosis.—*Journal de Médecine de Paris.*

Syphilitic Ulcers.—In *La Semaine Médicale*, the following prescriptions are given for the treatment of syphilitic ulcers.

℞.—Salicylate of mercury, Carbonate of potassium } of each 15 grains.
Distilled water . . . . 6 ounces.

Apply to the part by means of compresses, or if an ointment is preferred, the following may be used:

℞.—Salicylate of mercury . . 15 grains.
Vaseline . . . . . 1 ounce.

Mix and use externally.

Sulphate of Copper.—BOLTON recommends sulphate of copper in the dose of a twenty-fifth of a grain for the relief of the muscular cramps which sometimes affect pregnant women.—*La Semaine Médicale.*

Powder for Atrophic Rhinitis.—HALL is stated to recommend the following in the treatment of atrophic rhinitis:

℞.—Bicarbonate of sodium, Borate of sodium } of each 5 grains.
White sugar . . . . 12 grains.

This is to be dissolved in two ounces of hot water and snuffed up the nostril thoroughly. After this has been employed to loosen any secretion which may remain, intra-nasal instillations of weak solutions of alum, in the strength of 1 per cent., or in other cases sulphate of zinc, nitrate of silver, or powdered iodoform, or aristol, or salol, or boracic acid, are useful. After these applications have been made, it is well to apply to the mucous membrane of the nasal cavity a spray of eucalyptus as follows:

℞.—Vaseline . . . . . 1 ounce.
Essence of eucalyptus . . 1 drachm.

In other cases it is only necessary to spray the nostrils with liquid vaseline.

CURRENT LITERATURE.

SATURDAY, MAY 23, 1891.

EPIDEMIC RELATIONS OF DIPHTHERIA IN NORWAY.

Axel Johannessen, of Christiania, reviews the various epidemics of diphtheria which have occurred in Norway, and makes some remarks upon diphtheria and croup. He concludes that the largest part of the cases of croup which occur both before and after the great epidemics of diphtheria are of diphtheritic nature.

An interesting point is developed regarding the mode of invasion of the disease and the parts of the country affected. These, in different epidemics, have been to a certain extent the same. Density of population and such means of conveyance as railways and streets do not appear to play any part in the spread of the disease. The coast districts have one-third more cases of diphtheria than the inland districts, and the fishing districts of the coast are the most affected. At Dorschfang from 25,000 to 30,000 men collect in 5000 huts, being huddled together under bad hygienic conditions. At Tromsö-Stift diphtheria generally shows the highest number of cases of the disease—as many as 105 per thousand of population. Moreover, statistics also show that those districts whence the fishermen are sent out and return again are invaded by the disease in proportion to the number of fishermen, a condition which is true of other epidemic diseases, especially typhoid fever.

In Norway and Sweden the morbidity in the cities is, on the whole, greater than that of the country; but usually epidemics in cities develop more slowly, and rarely reach an excessive height; whereas, it is much more frequent for an epidemic in the country to rise rapidly to a high ratio between disease and population. The mortality is absolutely greater in the cities; on the other hand, the percentage of dead of those medically treated in the country districts is considerably higher. This circumstance seems to be due to the fact that throat diphtheria is, in the country, more fatal than in the cities, where, on the other hand, a decidedly greater number of victims is furnished by diphtheria of the larynx.

The great variations in the disease curves are not primarily dependent upon meteorological influences. —*Deutsche med. Wochenschrift*, March 19, 1891.

DIAGNOSTIC VALUE OF THE PLASMODIUM OF MALARIA.

O. Hertel and C. von Noorden report, from Gerhardt's clinic, two cases which illustrate nicely the diagnostic value of the plasmodium of malaria. The first case was that of a woman, twenty-four years of age, with no hereditary tubercular or other taint. For the past few years she had drank beer to excess. To this excessive use of alcohol she attributed the pains in the stomach and vomiting from which she had suffered since May, 1890. On July 3, 1890, she was again taken sick with violent pains in the stomach, loss of appetite, and fever. On July 5th, at 12 M., she had a chill, followed by pains in both sides on taking a breath. On July 6th, 7th, and 8th, chills at the same time of day (12 M.). At 2 P. M., temperature 104.1°. Organs of throat and chest healthy. Some tenderness in epigastrium. Other organs of abdomen apparently healthy. Pains in stomach continued. Chills (followed by fever and sweat on the 10th) occurred July 9th, 10th, and 11th, from 11.30 A.M. to 2 P.M. No plasmodium could be found. On the 11th the spleen extended to the edge of the ribs. No chill occurred on July 12th, but one occurred July 13th. Quinine was then given; the chills did not cease, but returned at a later hour. The case was not clear. Continued absence of the plasmodium indicated that the disease was not malarial, and yet otherwise the disease appeared to be of that nature. On July 16th, the attacks of fever ceased quite suddenly, almost as though the quinine had had a delayed action upon them. In the next few days the spleen became swollen.

On July 24th the rise in temperature recurred, but in a moderate degree, without chill, and irregularly distributed over the day. Two days later a pleural effusion was discovered behind on the right side, and at the same time there were heard at the right apex fine crackling râles, which disappeared completely after a deep few breaths. There was, and had been, no sputum. After the lapse of eight days the percussion note over the right apex was higher, shorter, and softer, and the breathing not purely vesicular. The patient was then dismissed. In October following she was found to have marked infiltration of the right apex of the lung and pronounced tubercular ulceration of the larynx. Thus the case became clear.

In the second case, a man, twenty-eight years of age, was admitted June 28, 1890. He was, up to the time of his sickness, at work digging a trench, throwing up earth, and putting down water-pipe. About eight days before his admission he was taken sick with pains in the neighborhood of the navel and sacrum, and was in a condition of great stupor. On June 25th he was seized with a chill, which is said to have been repeated almost daily up to June 28th. He was generally unwell and was able to work only two hours a day. The chill, which occurred nearly every day early in the morning, was accompanied by a feeling of heat, headache, and stupor, disturbances which subsided gradually in the course of the afternoon after a pretty profuse sweat. The attacks are said, however, not to have been equally violent every day, but to have been more severe every second day. The liver was somewhat enlarged downward; the spleen was scarcely enlarged in breadth. Over the lung, in the neighborhood of the right nipple, there was a narrow zone having a tympanitic percussion note, and over this area were heard fine moist râles. There was no expectoration.

Up to this point the examination showed a febrile disease, the cause of which was obscure. On July 30th there was a violent chill. Plasmodia were found in the blood. Chills recurred until July 5th, when quinine was given. Plasmodia were found at the height of the disease. The patient was dismissed cured July 14th. The cause of the disease became clear as soon as the blood was examined.

Regarding the detection of the plasmodium, the authors say that fresh, unstained preparations, viewed through a good microscope with an immersion lens at the bedside of the patient, give the most beautiful pictures. If the blood cannot be examined in this way, cover-glass preparations can be made, heated over the flame or fixed with absolute alcohol, and stained with concentrated methyl-blue or malachite-green. When prepared in this way the plasmodia, frequently carrying pigment in the middle of their bodies, are stained pale blue or greenish and stand out sharply. They cannot be confounded with anything else, whether they are included in a red blood-corpuscle or free in the serum.—*Berliner klin. Wochenschrift*, March 23, 1891.

ETIOLOGY AND DIAGNOSIS OF PURPURA HÆMORRHAGICA.

LETZERICH believes the cause of purpura hæmorrhagica to be a special bacillus, which in its conditions of growth presents some similarity to the anthrax bacillus. Both form, in Koch's stick-cultures, more or less irregular colonies, the centre of which consists of reticular threads which, at the edge, pass over into sheaf-shaped little bundles, partly bent back. They differ essentially, however, in their size and in the form of the spores. Although in both a constriction of the rodlets is observed in bacilli of different lengths, those of purpura are shorter and narrower, and the spores are very small and absolutely round, not large and oval, as in anthrax bacilli. Moreover, the bacillus of purpura fluidifies gelatin only with great difficulty, at a high temperature (77° to 88° F.), and in the immediate neighborhood of the colonies.

In the petechiæ of men and of animals subjected to experiment, are found groups of microörganisms arranged in manifold sheaf-shapes, and part of them segmented; in these, often at uniform distances, are spores, frequently lying thickly under one another.

The surfaces of the points of inoculation in Koch's nutrient gelatin present smooth, crescent-shaped depressions, which are recognizable only upon attentive observation.

The bacillus of purpura forms no toxin, but only a weak ptomaine; this explains why there is only occasional slight evening fever.

Sections through petechiæ are best stained with simple methyl-violet solution, while for teazed and isolated preparations and for diluted blood carbol-fuchsin is preferable.

Letzerich describes an acute, or subacute, and a chronic form of purpura hæmorrhagica. They are occasioned by the different power of resistance of the infected individual. Recovery may occur in six, eight, or twelve weeks; or relapses at no precise intervals may occur and may drag on for years. The chronic relapsing form, however, seems to be rare. Four of Letzerich's cases belong to the acute, and two to the chronic, form.

Letzerich had his third attack of purpura in November, 1889. About three weeks before he had a feeling of weariness and heaviness in the limbs, with poor appetite and slight evening fever. There were at this time also hæmorrhages from the nose, throat, and gums. Diarrhœa then set in. The liver became much swollen and so did the spleen, while the skin assumed a pale-yellow color. It is noteworthy that with the occurrence of fresh petechiæ there was an itching sensation in those places where the petechiæ were about to form.

In the case of a boy, thirteen years old, the same symptoms occurred. The whole body, limbs, and trunk became strewed with petecheæ of various sizes. Upon the floor of the mouth, velum palati, and mucous membrane of the cheeks and throat were pretty large vibices. The liver dulness was more than double its normal dimensions. The spleen extended beyond the edge of the ribs and felt hard. There were slight evening fever and slight hæmorrhages from the bowel after the diarrhœa had lasted some days. The acute swelling of the spleen and liver subsided quickly.

In Letzerich's third attack, at the beginning, rodlets and bacilli of different lengths, some with spores, were found between numerous scattered blood-cells and some young epithelium and cells from the rete Malpighii. Free spores and single bacilli were to be found in large quantities in the field of the microscope. Three weeks later the fresh petechiæ were paler in color, smaller, and generally round in shape. The rodlets were much fewer, so also were the constricted bacili. Free spores could only be seen in scattered positions. After a further period of ten to fourteen days only a few rodlets were to be found, and they did not take the stain as well. Spores could be found only here and there. After a further interval of fourteen days rodlets had entirely disappeared, and only single groups of dull bacilli and individual spores were found. Letzerich thinks that the bacilli take the stain in its full intensity only when they are living, and hence this fact may be used to determine the vitality of the organisms.

As regards treatment, he speaks highly of a 4- or 5-per-cent. solution of antipyrine for local use to check hæmorrhage. The chief factor in recovery is the maintenance of absolute rest for a long time. Too early rising predisposes to relapses. The patient must be well nourished with eggs, broths, milk, and wine. Iron and quinine are valuable drugs. Letzerich expresses great confidence in the utility of benzoate of soda in all infectious diseases.—*Zeitschrift für klinische Medicin*, Bd. lxxx. Hefte 5, 6.

SOCIETY PROCEEDINGS.

THE AMERICAN MEDICAL ASSOCIATION.

Forty-second Annual Meeting, held at Washington, D. C., May 5, 6, 7, 8, 1891.

[Continued from p. 567.]

Fourth Day—General Session.

Section of Surgery and Anatomy.

The first paper was read by Edmund Andrews, M.D., LL.D., Professor of Clinical Surgery in Chicago Medical College, on "Cadaver Studies on the Removal of the Semilunar Ganglion Through the Floor of the Cranium."

Dr. Andrews began by pointing out the severity and obstinacy of many of the cases of facial neuralgia, as well as the frequency of relapses following stretching and excision of the nerve. He has several times relieved this painful affection temporarily by simply loosening the old stump or cicatrix in a case which had previously had a neurectomy performed.

The author believes the origin of the neuralgia is a peripheral irritation, perhaps of a dental nerve; this causes a neuritis which travels upward until the semilunar ganglion is reached. Therefore, stretching or excision, without interfering with this ganglion, is usually not followed by permanent benefit. Following up this idea, about one year ago Dr. Andrews began an investigation upon the cadaver, looking toward a practical means of removing the semilunar ganglion in the human being for the relief of neuralgia of the trifacial nerve. While pursuing these studies he saw an account of this operation as having been performed by Dr. Rose, of London, in November of last year. This seems to be the first time this operation has been done. In this case all the pain seemed to be in the superior maxillary bone of one side, and, yielding to the request of the patient, this was removed, which gave ready access to the foramen ovale. A trephine was applied at this point, and the ganglion removed without difficulty. At the end of three or four months there had been no return of pain, but the eye on this side became inflamed, and was removed to avoid sympathetic inflammation of the other. It was thought that this was due to injury at the time of the operation.

In January of the present year Professor Rose did a second operation. This time an H-shaped incision was made over the zygomatic arch. The zygoma was sawed through at either end, and turned down with the lower flap. The coronoid process of the inferior maxillary bone was likewise sawed through and turned up with the upper flap. In this way the foramen ovale was again exposed, and the operation continued as before. After the operation is concluded, the coronoid process and the zygoma are wired in their places.

Professor Andrews has worked out four other methods for performing this operation, of which he considers the following the best: The H-shaped incision is made, and flaps, including the zygoma and coronoid process, as in Professor Rose's second operation. Some fibres of the masseter muscle are then snipped, and the origin of the internal pterygoid muscle is dissected off. The inferior dental and gustatory branches of the inferior maxillary nerve are thus reached, which guide the operator to the foramen ovale. The trephine is then applied to the edge of the foramen, and the ganglion which is on the anterior portion of the petrous portion of the temporal bone is reached. The dura mater and nerve are now peeled from the skull. Dissect to inner side with scalpel or scissors. The superior maxillary branch is now cut off, and the ganglion dissected from the dura lying between it and the convolutions. This is rather difficult, as it is very adherent to the dura. The dissection may be facilitated by making traction on the inferior dental and gustatory nerves. The wound is closed as advised by Professor Rose.

Dr. Lawrence Turnbull, of Philadelphia, then read a paper "On the Deaths from Chloroform and Ether since the Hyderabad Commission, with Conclusions Drawn from Them."

The whole number of deaths which he was able to collect was forty-three. Of these, thirty-nine were from chloroform, and four from ether. An analysis of the deaths due to chloroform showed that death occurred from syncope in five cases; in thirteen the heart stopped first; in ten the respiration failed first; in four the heart and respiration seemed to cease simultaneously; and in twelve cases the mode of death is not stated. The cases above alluded to, added to the three hundred and seventy-five cases collected by Wood, in a paper read at the Medical Congress held in Berlin last year, make four hundred and fourteen reported cases of death from chloroform to the present time.

Considering the fact that either anæsthetic does not always prove fatal in a uniform manner, Dr. Turnbull concludes that in the use of either chloroform or ether, the most careful attention to the pulse and respiration is necessary.

In the discussion Dr. Hunter Maguire said he did not consider chloroform more dangerous than ether, but thought that each anæsthetic had its uses, and one or the other should be selected according to the case. He believes chloroform the safer in organic heart disease, or if there is renal or bronchial trouble, and he does not hesitate to give it in these cases. On the other hand, he would give ether in cases of fatty heart. In over 14,000 administrations of chloroform he has known of but one death, and that was due to fright from rapid anæsthesia, owing to being in too great haste. He insists upon the necessity of administering chloroform slowly.

Dr. Hearn, of Philadelphia, believes that the secret in giving chloroform is to give it slowly.

Dr. W. W. Keen, of Philadelphia, read a very interesting paper on "Linear Craniotomy (miscalled Craniectomy) for Microcephalus."

He began by defining the operation, which is really a long incision in the skull, and objects to the term "craniectomy," as the termination *-ectomy* implies removal of the part.

In addition to his own cases, Dr. Keen has been able to collect eight cases in all, including two cases in which trephining was done for the same condition.

In Dr. Keen's operation an incision is begun in the scalp at the frontal eminence, and carried backward parallel with the sagittal suture, across the lambdoidal suture. By means of a trephine and specially adapted cutting forceps, a narrow strip of the skull is removed, corresponding with this incision.

Wyeth did two such linear craniotomies, one on either side of the sagittal suture, removing a strip of skull one-fourth of an inch in width, then by inserting the tips of the fingers against the outer edge of the wound thus made the skull is forcibly separated until the width of the incision in the skull measures one to one and a half inches.

Dr. Keen thinks that double craniotomy increases the risk in the operation considerably, and does not better attain the object of the operation.

Of the eight cases reported two died, one, one and one-half hours after the operation, of heart failure; the other, three and one-half hours after operation, of acute anæmia. In four of the cases the improvement in the mental as well as general condition, after operation, was very marked. One case was reported too soon to judge of the result. So far as the reports go, the result appears to be as good after trephining as after craniotomy, but the author thinks the latter the more logical operation.

DR. B. MERRILL RICKETTS, of Cincinnati, Ohio, followed with a paper on "Exploratory Incisions in Cases of Fracture of Bones, where Doubt Exists as to their Character, with Report of Observations on the Lower Animals."

After detailing some experiments on the lower animals, he advocated the replacing of all fragments of bone in cases of compound fracture, and believes that if the periosteum be made to overlie them, union will take place. He favors cutting down on fractures when doubt exists, and then wiring the fragments.

A paper on "Sprains of the Ankle" was then read by DR. W. R. TOWNSEND, of New York.

Attention was called to the unfortunate results so frequently following badly treated sprains of the ankle-joint; the most common of these being flat-foot. The author advises the Catterell dressing, which is applied as follows: The limb is elevated to reduce swelling; straps of adhesive plaster are then applied over the affected part, just as is advised in chronic ulcer of the leg, and a pressure bandage is then applied. The patient is allowed to use the foot as before. In cases of more severe sprain a plaster-of-Paris bandage is applied over this for a few days, being careful to remove the plaster-of-Paris dressing soon, to allow of motion. Massage is useful after the acute stage has passed.

DR. JOHN A. WYETH, of New York, then read a paper on "Supra-pubic Cystotomy."

He reported twenty-three operations performed by himself, all of which recovered. He considered the preparation for and the details of the operation. The abdominal wound is treated by the open method. If the bladder is perfectly healthy and has suffered no violence, the wound may be closed; otherwise, this is also allowed to close by granulations. Dr. Wyeth is deeply impressed with the safety and advantage of this operation, and believes it should succeed all other methods of cutting into the bladder.

In the discussion, Dr. McGuire said he had performed this operation twenty-nine times, and preferred it to any other method, where it was necessary to do cystotomy for any cause.

Dr. W. W. Keen, of Philadelphia, and Dr. W. E. B. Davis, of Birmingham, Alabama, also spoke very highly of this operation.

The last paper read was by DR. ROBERT NEWMAN, of New York, on "Platinum Needles for Electrolysis."

The theory of electrolysis was first considered, and then the essentials of a good needle. Platinum was found by all odds to be the best substance of which to make these needles, the only objection to it being its great ductility, which causes the needle to bend from the force necessary to introduce it into the tissues. Dr. Newman, therefore, devised a spear-pointed grooved needle, which was first thrust into the tissues, the platinum needle being inserted along the groove. The first needle was then withdrawn. This plan seemed to him to leave nothing to be desired.

Owing to a misunderstanding a session had been arranged for Friday afternoon, May 8th, but as the delegates were anxious to return to their homes, the papers on the list for that day were read by title, and referred to the Committee on Publication.

The following officers were elected for the next year:

Chairman.—J. McF. Gaston, M.D., Atlanta, Ga.

Vice-Chairman.—Mordecai Price, M.D., Philadelphia.

Secretary.—F. W. Mann, M.D., Detroit, Mich.

The section then adjourned.

FIFTH FRENCH CONGRESS OF SURGERY.[1]

(Continued from page 505.)

THE second question which had been placed before the members of the Congress for discussion was: "What are the After-results of the Extirpation of the Uterine Appendages in the Non-neoplasmic Affections of these Organs?"

SIR SPENCER WELLS, of London, opened the subject by saying that he continued to be very favorable to the operation, which had proven to be of great service to many suffering women, still he thought that oöphorectomy was too easily resorted to; and he thinks that if indications are very frequent for neoplasms, they are and ought to be rare for non-neoplasmic affections of the ovaries. Certain kinds of salpingitis can be cured without an operation, and certain women operated upon for metrorrhagia very often, if they do not die as a result of the operation, keep on suffering and even have menorrhagia.

MR. LAWSON TAIT next spoke, saying that extirpation of the uterine appendages gives excellent operative results, his death-rate being only 3 per cent. To be able to study the after-effects of extirpation of the uterine appendages, Mr. Lawson Tait divides his patients into three classes: The first one contains ovarian castrations for uterine diseases, especially for fibro-myoma; in the second are placed castrations for inflammatory lesions of the appendages; finally, a third class, in which enter extirpation of the appendages for nervous symptoms having a relation to uterine or menstrual troubles.

He has performed 271 ovarian castrations for fibro-myoma, and finds that these give him the best results. Out of 265 operations, 8 have not given satisfactory results, and the patients had to be subjected to a hysterectomy; while in 257 cases there was a complete cure, the tumor having either diminished or the pains having completely disappeared.

[1] Held in Paris from March 31 to April 4, 1891.

The influence of age in regard to results is important; before the age of forty 70 per cent. of the tumors disappear completely; between forty and fifty the tumors disappear less easily, but diminish from one-third to one-sixth their previous size. He does not think that the menopause cures those tumors or diminishes the bad symptoms produced.

He thinks that it is a wrong statement to say that 10 per cent. of the castrations for uterine fibroid tumors bring on insanity. Out of all his operations, Mr. Tait has only observed one case of insanity, while, on the contrary, he has seen three well-marked cases of insanity cured by castration performed for fibromata.

In his second class, which comprises all the cases of salpingitis Mr. Tait is less affirmative; he thinks the operation in those cases is a difficult one, yet he does not admit that one should stop in the middle of such an operation; he always goes on, and destroys adhesions, no matter how firm; intestinal and uterine fistulæ have been the consequence, but he has always succeeded in curing them. As to the after-results, they are simple if the operation has not been a difficult one. The menstruation may not altogether cease, but almost all the other symptoms disappear.

In regard to his third class, that of castration for nervous symptoms, Mr. Tait thinks he has not operated early enough, as he has always waited until pushed to the extreme point by the patient, her physician, and family.

He thinks that in the future we ought to operate in those cases more often than is now done. He operated in 1881 on a young idiotic lady, who had been so afflicted since her birth; at each menstrual period she suffered from severe epileptic fits. Since the operation, the menstruation has disappeared and the fits have greatly diminished and her general health (not her idiotic condition, however) has been most favorably influenced.

Another interesting case was that of a young woman who became pregnant fifteen months after her marriage; one year later she presented well-pronounced signs of mania which appeared to be related to menstrual troubles; no treatment did any good; she was prevented in time, one day, from killing her child. He was asked to operate, but refused; finally, eight months later, she was operated upon, which resulted in her complete recovery.

DR. JACOBS, of Brussels, from 1888 to this time has operated on 58 patients, 9 of which operations were for unilateral disease of the appendages, and he has collected 54 operative cases. Out of 7 operations for bilateral suppurative salpingitis all are now in excellent health, although 3 of them complain of occasional abdominal pains every month. One of the two unilateral suppurative salpingitis cases became pregnant since the operation and had a normal pregnancy; 23 were operated upon for catarrhal salpingitis, 19 being bilateral. These are all cured or greatly relieved except one, who suffers more to-day than she did before the operation. Three cases of hæmato-salpingitis gave him excellent results. His conclusions as regard distant results are: 1st. That they are very favorable in cases of suppuration of the appendages. 2d. In catarrhal affections, especially those of small volume, they are less favorable; while in nervous women castration is rarely of any benefit.

PROF. LE DENTU, of Paris, operated 34 times with one death from septic peritonitis, the ligature of the uterine stump having ruptured. Three cases showed unfavorable results; in one, one of the ovaries removed being tuberculous, the lesion has become generalized; in one there remains a fistula, while in a third there was a stercoral abscess.

As to the nature of the after-effects, some patients are completely cured, while others suffer for a limited time and others for an indefinite period. The causes of these variations are numerous. Nervous patients suffer much longer than others; again, adhesions which had been destroyed during the operation, reform, or a continuous metritis plays an important *rôle*. One of his patients, upon whom he had performed two laparotomies and one curetting, was only cured after an abdominal hysterectomy.

Dr. Le Dentu called attention to a peculiar after-result of extirpation of the appendages. A woman, operated upon in 1888, returned in 1890 suffering from violent pains of the left side, extending on that side up to the face; on digital examination a small tumor was found in the left vaginal cul-de-sac. Uterine dilatation was performed, and on the twelfth day she evacuated a large quantity of black liquid; since then the tumor and pain have disappeared. In another case, after removal of the appendages, the patient did not seem to recover as desired, and only did so after an extensive effusion of liquid through the vagina. He found in another patient operated on some time ago, two small cysts, one on the right, the other on the left side. These secondary cysts are probably, according to the speaker, the remains of a small portion of the tube which was not well removed.

DR. TERRILLON has performed 140 operations for removal of the uterine appendages: 82 for catarrhal parenchymatous salpingitis; 36 for purulent salpingitis (ovarian or tubal); 10 for hæmo-salpingitis; 8 for tubercular lesions, and 4 for hydrosalpinx, but he only presents the after-results of his first 90 cases, the series of which ended last August. Of these 90 operations he has had 4 deaths, 74 absolute cures, and 12 cures with a few disagreeable symptoms, such as painful menstruation or vesical pain. Out of his 50 operations performed since August, he has had five deaths.

Dr. Terrillon has also observed a peculiar complication in three cases: In the first, a woman was operated upon for double catarrhal salpingitis; she returned three months after the operation suffering severely from abdominal pain. Her temperature was 40° C., and she presented on the left side of the abdomen a painful tumor; by aspiration 324 grammes of a yellowish serous liquid were evacuated, the analysis of which indicated the presence of albumin and fibrin, but no pus or microbes.

In December last, a second patient, operated upon for double salpingitis, returned to the hospital, two weeks after having left it, with the same phenomena as the preceding case; aspiration gave 300 grammes of liquid of the same color as in the previous case.

Finally, last week, a patient, operated upon by Péan's method presented in a vaginal cul-de-sac 575 grammes of the same liquid.

PROF. BOUILLY, of Paris, said that the after-results are favorable when one has to deal with salpingitis, or

painful ovaritis; but such is not the case with interstitial catarrhal salpingitis, which demands a long and tedious operation. As to interference for nervous phenomena, he does not advise it. He has a series of 90 cases, and divides the unsuccessful into three groups: 1st, recurring pelvi-peritonitis; 2d, painful cases; 3d, secreting fistula. Out of his 70 patients he has had 9 more or less deferred troubles, twice severe peritonitis and abscess, with recovery; 3 cases of persistent pain; 3 cases of muco-purulent discharges, which, however, disappeared after curetting the uterus; and in one case persistent metrorrhagia.

Dr. L. P. Richelot, of Paris, has performed a total of 240 laparotomies since January, 1880, and has operated 170 times for removal of the uterine appendages for non-neoplasmic affections. Of this number, about 150 have been kept under observation. He divides his cases into eight groups, the first one comprising simple salpingo-ovaritis or parovaritis; in these cases, of course, the after-results will certainly be favorable, but one must be careful not to remove the uterine appendages uselessly.

In the second group he places ovaries with small cysts. The author had thirty patients, out of which the majority were rapidly cured, while about ten had a period of "therapeutical hesitancy," during which they did not admit they were well.

In the third group is chronic parenchymatous and adherent salpingitis and hydrosalpinx; patients of this group, who have suffered so much, all improve.

In a fourth group he places salpingo-ovaritis which is complicated by a movable or adherent retroversion.

In these cases he has always seen the uterus return to its normal situation by the pediculization of the appendages of the uterus.

The fifth group comprises hæmato-salpingitis and the hæmatoceles. Out of twelve patients, with the exception of two cases of hæmato-salpingitis complicated with strong and solid adhesions, all improved rapidly.

In a sixth group he places pyosalpingitis and suppurative ovaritis; this group gives the most satisfactory results. Out of 27 cases 15 were cured absolutely; of the remaining patients, there are several nervous patients who have complained of pains and menstrual troubles, although the pelvic organs became normal.

In the seventh group are the cases of uterine fibroma; the results have been very satisfactory, suppression of the pains and menstruation and sometimes atrophy of the tumor resulting.

In the eighth group we have neuralgia and true hysteria, and in this group he only includes fixed and violent neuralgias having their seat in perfectly normal organs. The cases referred to were as follows: A patient had a fixed, persistent, and very acute pain on the left side, which encouraged the author to perform unilateral castration, which was immediately followed by a disappearance of the neuralgia. Another patient had been suffering for five years with violent pains localized in the left side; removal of the corresponding ovary brought on an immediate cure. A third patient had been curretted, and the round ligaments had been shortened, yet, as she continued to suffer, the uterus and appendages, which were all normal, were removed and found perfectly healthy. Finally, a case of true hysteria, without any pain or ovarian lesions, was modified by castration.

Dr. Ségond, of Paris, was opposed to the distant results obtained by extirpation of the appendages through laparotomy. The results arrived at immediately by vaginal hysterectomy, applied to these same troubles. During the past two years he has performed 18 laparotomies for diseases of the appendages, and has had 17 operative cures and 1 failure; 5 radical cures, 2 for pyosalpingitis, 3 for non-suppurative lesions; 7 have been largely benefited by the operation but still suffer a little; finally, 5 have been operated upon, 4 for pyosalpingitis and 1 for a non-suppurating lesion, but all have suffered more or less since the operation; 2 of these patients present severe metrorrhagia, while 3 others present purulent discharges for which curretting and other treatment has proven fruitless. Moreover, 3 of these patients who had been carefully sutured have presented ventral hernias which are most troublesome.

On the other hand, Dr. Ségond has performed during that period 17 hysterectomies. All these patients are marvellously well, except one woman who had been operated upon by laparotomy before and who still continues to suffer.

Dr. Routier, of Paris, has removed, since 1887, the appendages 52 times: 27 were for pyosalpingitis; 4 tuberculous; 7 hydrosalpinx; 7 hæmato-salpinx; 11 interstitial salpingo-ovaritis. The results have been excellent in the great majority of these cases. Several of them have presented at the time of their first periods intense congestion of the face, dragging-down pains and felt miserable. As to the after-results, menstruation has been suppressed every time when the operation was not a complicated one, and, therefore, no danger was present of leaving fragments of the ovary in the abdomen. The abdomen is, as a rule, painless after the operation; still there are patients who have suffered from a heavy feeling in the abdomen, flushing, etc., at the menstrual periods; not more than half of those operated upon present these manifestations. Uterine atrophy is constant, the organ becoming infantile. In a word, removal of the appendages gives excellent results in cases of pyosalpingitis; in other cases, as of hydrosalpinx, hæmato-salpinx, interstitial salpingitis, ovarian cysts, the results are also good, but this surgeon finds that the suppression of menstruation in certain young people is followed by a state of uncertain health.

Dr. Bazy has also removed the appendages in two hysterical persons. In one case, the hysteria was a grave one, the patient suffering very much in the abdomen; all internal remedies having failed, the operation was resorted to and the surgeon found the ovaries and tubes fixed to the pelvic walls; the uterus was partly detached as well as the adhesions, and the immediate results proved to be very good, but later the pains recurred.

Dr. Doyen, of Rheims, has performed 56 operations for removal of the appendages for troubles other than ovarian cysts or cancer.

Thirty-two laparotomies have given 2 operative deaths and 3 negative results, one suffering from double fistulous purulent salpingitis, the other two being extreme cases of hysteria. Seven continued to suffer with abdominal dragging-down pains, neuralgia, and gastric

crisis; three of these last improved under appropriate treatment, a fourth was operated upon to obtain hysteropexia, two others required vaginal hysterectomy.

The 20 satisfactory results comprise 13 double-tube ovarian castrations and 7 incomplete operations, 4 of which were done to destroy pelvic adhesions and reduce the retroverted uterus.

Since 1887, he has performed 20 vaginal hysterectomies for non-neoplasmic diseases of the appendage, with only one death. The therapeutic results of these operations are most remarkable; only one of his cases had a temporary cure, as in this case after evacuation of the hæmato-salpinx the uterus was replaced in its former position. A simple laparotomy with destruction of the peri-uterine adhesions soon brought about a definite cure.

The later results of these 56 operations demonstrated that total castration, that is, vaginal hysterectomy followed by removal of the appendages, is the operation which gives the most satisfactory results. Dr. Doyen performs it whenever the uterus is painful and displaced and requires removal; but he finds that in a good many cases castration is excessive, and a simple laparotomy would be all that is necessary. Cases should be selected.

CORRESPONDENCE.

ST. LOUIS.

The objections to a Three-course requirement.—The advantages of the Examining Board.

To the Editor of THE MEDICAL NEWS,

SIR: The objections to a three-course requirement which was championed by Dr. Todd in THE MEDICAL NEWS of May 2d, 1891, are as follows:

1. It possesses an erroneous basis, viz.: the standard of time and not of knowledge.

2. It is unfair in that it takes no cognizance of the superior intellectuality and industry of students.

3. It allows no credit for previous work and study, no matter how extensive, unless pursued regularly in a recognized medical school.

4. It is unjust because it works hardship upon deserving young men who happen to be poor in worldly goods; the rich are thus given the advantage and preference.

5. It perhaps would encourage laxness amongst teachers and indifference amongst students.

6. The ends would not be accomplished, because second-class colleges would exist under its enforcement just as well as now, and they would be equally well patronized.

The advantages of the examining board are:

1. It possesses a just and rational basis, that of knowledge.

2. Every student would perforce depend upon his own efforts and zeal, and would not be indifferent to his studies unless he was not anxious to practise.

3. It is impartial—the rich have no advantage over the poor.

4. The licensing power being taken away from the medical colleges, their instruction, by the sheer force of competition, would be the drawing card, for students would go where they could learn most, rather than where they could most easily graduate.

5. Second-class colleges (and by this I mean those characterized by loose management and incompetent instruction) would be forced out of existence, because so many of their graduates would be rejected by the various State Boards.

In conclusion, let me re-state a remark that I have already made, to the effect that it will be easy to convince the legislators of the wisdom of this measure; it is so thoroughly in keeping with fairness and right that to the law-makers it so smacks of the very essence of all law, that they advocate it in preference to all other measures.

Then let the right prevail; relieve the boards of health of the annoying duty of censors of the medical profession, and dictators of medical colleges; let the State's money be expended—not for the compilation of statistics, their publication and circulation, articles of value to the doctors alone—but for the prime object of such a board—the hygiene of the State; let the impartial board of examiners pass on every new graduate who seeks the privilege of practising in the State.

In such a commonwealth the law of medicine will be the law of fairness, democracy and right, and the licensed doctor will lie more comfortably on the bed of roses nurtured by his own industry, while the incompetent one will seek some more congenial occupation.

Three results will obtain:

1. An ever-increasing number of good, competent, and worthy doctors.

2. An ever-decreasing number of unworthy, unprofessional, and incompetent physicians.

3. Medical colleges upon a higher, better, and more intelligent plane.

Yours truly, YOUNG J. BOND.

GRAND AND PAGE AVES.

NEWS ITEMS.

Beri-beri in a College.—At Rangoon, Burmah, there exists a theological training school or seminary for the native tribe called the Karens. The students of this institution have been for thirteen years seriously afflicted by beri-beri. The sickness has several times been so general as to threaten to break up the school. Various sanitary alterations in the buildings have been tried in the hope of ridding the place of the local causes of the disease, but without success. The measure about to be adopted will be the abandonment of the old buildings in Rangoon and the construction of new ones at a site where more space can be had, about nine miles above the city. The gradual removal of the college to that point is at present in progess. The attendance of students in 1890 was seventy-six; of these eighteen, or twenty-three per cent., were attacked by beri-beri, and were compelled temporarily or permanently to leave college.

A New Jersey Health Case.—A decision by the Recorder of Hudson County, New Jersey, in a certain Health Board prosecution is worthy of note. The complaint was in reference to noisy crowing roosters, alleged to be a detriment to the health of a neighborhood by

reason of the production of insomnia, a ground of complaint common to the experience of nearly all Boards of Health. After an attentive hearing of the counsel for both sides the Recorder gave his decision adversely to the Board of Health on the ground that "a rooster is not an animal in a legal sense." The counsel of the Board gave notice that he would appeal the case.

Outside Physicians to Admit Patients to the Philadelphia Polyclinic Hospital.—As an evidence of the liberal spirit with which the Philadelphia Polyclinic Hospital is managed, it has been decided that the full privileges of the wards, private rooms and suite of operating rooms may be extended by any member of the staff to physicians not connected with the institution.

Many physicians who are not attached to hospitals have frequently cases that they would like to have under the auspices of a hospital with its resident physicians, trained nurses, and sanitary *régime*, and yet wish them under their own observation.

Patients thus admitted to this hospital are attended by the physician for whom the case is admitted as fully as though he were a member of the staff. The admission blanks must invariably be signed by a member of the staff, who thereby assumes the responsibility for the acts of the physician, after which arrangements and terms may be made with the matron.

Visitors are cordially invited to visit and inspect the hospital, on Lombard Street west of Eighteenth, on Mondays from 3 to 4 P. M.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM MAY 5 TO MAY 18, 1891.

By direction of the Acting Secretary of War, Par. 5, S. O. 24, January 29, 1891, from this office, granting JULIUS H. PATZKI, *Major and Surgeon*, six months' leave of absence, is so amended as to grant said leave on surgeon's certificate of disability.—Par. 15, *S. O. 99, A. G. O.*, May 1, 1891.

KENDALL, WILLIAM P., *Captain and Assistant Surgeon.*—Is relieved from duty at Fort D. A. Russell, Wyoming Territory, and will report in person to the commanding officer Fort Douglass, Utah Territory, for duty at that post.—Par. 14, *S. O. 102, A. G. O.*, May 5, 1891.

MCCAW, WALTER D., *Captain and Assistant Surgeon.*—Is relieved from duty at Fort McPherson, Ga., and will report in person to the commanding officer Camp Pilot Butte, Wyoming Territory, for duty at that post, relieving George E. Bushnell, Captain and Assistant Surgeon. Captain Bushnell, on being relieved by Captain McCaw, will report in person to the commanding officer Fort McKinney, Wyoming Territory, for duty at that post.—Par. 14, *S. O. 102, A. G. O.*, May 5, 1891.

EDIE, GUY L., *Captain and Assistant Surgeon.*—Is relieved from duty at Fort Douglass, Utah Territory, and will report in person to the commanding officer Fort Niobrara, Nebraska, for duty at that post, relieving Timothy E. Wilcox, Major and Surgeon. Major Wilcox, on being relieved by Captain Edie, will report in person to the commanding officer Fort Huachuca, Arizona Territory, for duty at that post.—Par. 14, *S. O. 102, A. G. O.*, May 5, 1891.

GIRARD, JOSEPH B., *Major and Surgeon.*—Is relieved from duty at Alcatraz Island, Cal., and will report in person to the commanding officer Benicia Barracks, Cal., for duty as Post Surgeon at that post, and Attending Surgeon at Benicia Arsenal, Cal., relieving John H. Janeway, Major and Surgeon. Major Janeway, on being relieved by Major Girard, will repair to Philadelphia, Pa., and assume the duties of Attending Surgeon and of Examiner of Recruits in that city, and, in addition to his duties in Philadelphia, will perform the duties of Post Surgeon, Frankford Arsenal, Pa.—Par. 14, *S. O. 102, A. G. O.*, May 5, 1891.

CABELL, JULIAN M., *First Lieutenant and Assistant Surgeon.*—Is relieved from duty at Fort Niobrara, Nebraska, and will report in person to the commanding officer Fort Buford, North Dakota, for duty at that post, relieving Valery Havard, Major and Surgeon. Major Havard, on being relieved by Lieutenant Cabell, will report in person to the commanding officer Fort D. A. Russell, Wyoming Territory, for duty at that post.—Par. 14, *S. O. 102, A. G. O.*, May 5, 1891.

LA GARDE, LOUIS A., *Captain and Assistant Surgeon.*—Is relieved from duty at Fort Assinniboine, Montana, and will report in person to the commanding officer Fort McHenry, Md., for duty at that post, relieving Charles B. Byrne, Major and Surgeon. Major Byrne, on being relieved by Captain La Garde, will report in person to the commanding officer Fort Assinniboine, Montana, for duty at that post.—Par. 14, *S. O. 102, A. G. O.*, May 5, 1891.

CLARKE, JOSEPH T., *First Lieutenant and Assistant Surgeon.*—Is relieved from duty at Fort Riley, Kansas, and will report in person to the commanding officer Camp Poplar River, Montana, for duty at that post, relieving Jefferson D. Poindexter, First Lieutenant and Assistant Surgeon. Lieutenant Poindexter, on being relieved by Lieutenant Clarke, will report in person to the commanding officer Fort Niobrara, Nebraska, for duty at that post.—Par. 14, *S. O. 102, A. G. O.*, May 5, 1891.

By direction of the Acting Secretary of War, DALLAS BACHE, *Lieutenant-Colonel and Surgeon*, is relieved from duty as a member of the Army Medical Examining Board, New York City, and will return to his proper station, Omaha, Neb., and resume his duties as Medical Director Department of the Platte.—Par. 5, *S. O. 108, A. G. O.*, May 12, 1891.

By direction of the Acting Secretary of War, the extension of the ordinary leave of absence granted HENRY P. BIRMINGHAM, *Captain and Assistant Surgeon*, in S. O. 81, A. G. O., April 10, 1891, from this office, is changed to leave of absence on account of sickness, to date from May 1, 1891.—Par. 4, *S. O. 108, A. G. O.*, May 12, 1891.

MCKEE, JAMES C., *Lieutenant-Colonel and Surgeon.*—Having been found incapacitated for active service by an Army Retiring Board, is, by direction of the Acting Secretary of War, granted leave of absence until further orders, on account of disability.—Par. 11, *S. O. 106, A. G. O., Washington, D. C.*, May 9, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MAY 16, 1891.

RUSH, W. H., *Passed Assistant Surgeon.*—Detached from the "Saratoga," and prepare for sea.

ATLEE, S. W., *Passed Assistant Surgeon.*—Detached from Navy Yard, League Island, and ordered to the "Saratoga."

BRONNELL, C. DE W., *Assistant Surgeon.*—Ordered to Navy Yard, League Island, Pa.

STREETS, T. H., *Surgeon.*—Detached from Naval Examining Board, and prepare for sea.

MACKIE, B. S., *Surgeon.*—Ordered as member of Naval Examining Board.

CURTIS, L. W., *Passed Assistant Surgeon.*—Detached from Naval Academy, and ordered to the Practice-ship "Constellation."

LEACH, PHILIP, *Passed Assistant Surgeon.*—Orders to the U. S. Practice-ship "Constellation" revoked.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will be liberally paid for upon publication, or 250 reprints will be furnished instead of payment, provided request for reprints be noted by author at top of manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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ORIGINAL ARTICLES.

OPIATES IN ACUTE PERITONITIS.[1]

BY STEPHEN SMITH, A.M., M.D.,
OF NEW YORK.

PROF. ALONZO CLARK, in his article on "Peritonitis," in the *System of Practical Medicine*, makes the following statement:

"In 1840 there was a very fatal visitation of puerperal fever in this (Bellevue) hospital. . . . I was a daily visitor and took notes of all the cases. . . . The disease was fearfully fatal, although every known mode of treatment was tried in different cases . . . but, although with one or two exceptions, with the same result. At this time the opium plan was on its trial, and I had not acquired a confidence in it that authorized me to try it in these cases. The time for it came in 1851. Then a sudden, vigorous attack occurred. One woman was sent to me in whom the disease was well advanced; I instructed my house-physician not how much opium to give, but what effects to produce by it. I found this woman dying the next day, and that she had taken only three grains of opium in three doses. In three or four days seven cases were sent me from the lying-in wards. One was returned for error in diagnosis, and six put under treatment. Having found that prudence in my house-physician was so much more conspicuous than courage, another house-officer, who combined them both, was selected to be in almost constant attendance. The instruction was in these words: 'I want you to narcotize those women to within an inch of their lives.' He did it and saved every one of them. This gentleman is now known over the whole land as a learned and distinguished surgeon. I feel called upon to give his name in this connection that he may be a witness to the facts I state, and for the admiration with which his nerve and prudence impressed me."

It is an interesting fact that Prof. Clark failed to give the name of the gentleman whom he so highly complimented, and whom he thus publicly called to witness to the truth of his statement. As I was then a resident student in Bellevue Hospital and had the care of the six cases to which he alludes, I assume that I am the person referred to, and will take this occasion to bear witness to the facts which Prof. Clark brought forward in his paper.

At the period mentioned by Prof. Clark, Bellevue was a hospital only in name. The buildings were erected in the early part of the century, 1811–16, for prison and almshouse purposes. They were chiefly built on grounds reclaimed from the river, and without under-drainage or adequate sewerage. The buildings were very massive in construction and, in the prison style of that day, without a pretence of ventilation. For a quarter of a century, Bellevue was little else than a prison and a pest-house. All forms of contagious and infectious diseases were received into its crowded and illy ventilated wards. At various times, yellow fever, typhus and typhoid fevers, smallpox and cholera have been the prevailing diseases of its inmates.

The evolution of this establishment into a hospital was a very slow process. The prisoners were first removed to the Island, and gradually all of the able-bodied paupers were provided with quarters in the new almshouse. In time, only the sick poor were detained at Bellevue, and the institution assumed the general character of a hospital.

In 1840, the date to which Prof. Clark first alludes, the hospital had a resident physician, who was the sole responsible authority in managing its general and medical affairs. The appointment was purely political and the government was of the same character. In 1846–7 there came a complete change in the administration of the institution by the selection of a competent medical board and the final retirement of resident physicians. From this latter date, Bellevue as an organized hospital dates its origin. There was, however, comparatively little improvement in the sanitary condition of the hospital buildings for many years. Gradually better ventilation was secured, and the general cleanliness of the wards and beds was improved. The maternity wards of Bellevue were at this early date in the same condition as the other wards. They were not specially separated from the others, except that they were situated at the extreme end of one of the wings. The number of confinements usually averaged one daily, though they occasionally reached the number of sixty in a month.

Puerperal fever was the great scourge of the hospital at that period. Whenever it appeared, nothing seemed to control its progress, and no treatment saved its victims from speedy death. These facts are confirmed by referring to the outbreak in 1840, attended to by Prof. Clark, and reported by Dr. Vaché, the resident physician. He states that the disease made its appearance on the 12th of January, 1840, and was quickly followed by two more cases, apparently so malignant that it was immediately determined to vacate the room, with a view to its purification. The inmates were accordingly re-

[1] Address delivered at the annual meeting of the Fifth or Southern District Medical Association, held in Brooklyn, New York, May 26, 1891.

moved and the apartment whitewashed, ventilated and scrubbed; the bedsteads were cleansed, new beds and bedding introduced, and at the expiration of about a week it was considered sufficiently disinfected to return to it in safety; but the disease immediately reappeared, equally as violent and irremediable as before, and it was concluded most judicious to abandon the building. As promptly as it could be accomplished, another, some distance from the almshouse and appropriated for a nursery, was put in the most perfect order; the bedsteads were cleansed and painted, new beds and bedding were furnished; the physician and nurse were changed; the pregnant women were directed to cleanse their persons by bathing; new clothes, even shoes, were given to them, immediately prior to transferring them to their new habitation, and all intercourse with the inmates of the surrounding premises arrested. Notwithstanding these precautions, the first woman confined, and subsequently four others in succession out of five labors were attacked with the disease, which in every case was fatal. As a further effort in the cause of human life, and as the only rational means of arresting this terrible scourge, came the total abandonment of the lying-in establishment at Bellevue.

To the earlier resident medical students of Bellevue Hospital this sketch presents a graphic but familiar picture of an outbreak of puerperal fever in that institution in the years 1840–57. Cleanliness and isolation of patient and physician were the chief preventive measures employed, but they were powerless to control the spread of the disease. The mortality reported by Vaché was appalling. Of twenty-one cases, nineteen, or over 90 per cent., proved fatal. Nor was this death-rate unusual, as we learn from other sources.

It is important to notice the pathological conditions which were found to exist in the fatal cases. Careful autopsies were made in seventeen of these. The records of these autopsies, as published by Dr. Vaché, were made by Prof. Clark, for he states that he was a daily visitor and took notes of all the cases, and that it was from these notes that Vaché compiled his report of the epidemic. In sixteen of the seventeen cases examined post-mortem, there was, according to these notes, peritonitis. In these cases, there was effusion into the peritoneal cavity which is variously described as "sero-purulent" and "sero-lymphatic." In all seventeen, the uterus was examined and the pathological changes reported. In two cases this organ appeared to be without any special change. In the remaining cases, the alterations were those due apparently to metritis. In several, there were putrefactive changes of matters within the cavity, as the remains of the placenta and the natural discharges after child-birth. The following is an example: The cavity of the uterus was covered, from the fundus down to the cervix, with a dark-chocolate, stringy, fœtid substance, which was easily scraped off with the knife, showing the surface beneath injected; the cervix was covered with a firmly-adherent substance, of a greenish-gray color, with spots of white; the os uteri was of a dark-purple color; beneath the peritoneal surface of the uterus there was much lymph deposited. In several instances pus was found in the ovaries and Fallopian tubes. Pus was also found collected in considerable quantity between the uterus and bladder. In one case, many peritoneal bands had formed, binding the viscera together; an abscess, four inches in diameter, separated the peritoneum from the walls of the abdomen; the sub-peritoneal cellular tissue of the pelvis, extending nearly to the kidney, resembled lint soaked in pus; numerous deposits of pus were found under the peritoneal covering of the uterus, in the broad ligaments, ovaries and Fallopian tubes; the left internal iliac vein was occluded by a firm clot, which extended into the gluteal, ischiatic and obturator branches; in the clot were found collections of pus. The records of these autopsies were more or less accurately reported on every recurrence of puerperal fever at Bellevue Hospital between the years 1840 and 1851. They may undoubtedly be taken as illustrating the ordinary form of puerperal peritonitis when that disease prevailed in this hospital.

It is important also to notice the treatment of these cases, which is given in considerable detail. Of the two cases which recovered, in one the principal treatment was saline cathartics, wet cups to the abdomen, and opiates; and in the other, venesection and leeches to the abdomen. Of the fatal cases, four were treated with saline cathartics and venesection chiefly; in eight, calomel in scruple doses was given, combined with venesection and leeches; in ten, venesection was the more important element in treatment, combined in five cases with leeches; in five cases, turpentine as a cathartic was largely employed. In one, large doses of cinchona bark were used, as recommended by Dr. Burns, and later, turpentine as a purgative. It will be seen that the treatment was so mixed that it would be difficult to draw any conclusions as to the efficacy of any one remedy. Still it is noticeable that purgatives were actively and efficiently employed in seventeen of the twenty-one cases, and that in five cases the cathartic was salts. In the other cases, calomel and turpentine, two approved antiseptic remedies, were administered freely. Opiates, in the form of opium and Dover's powder, were given in most cases, but in small and occasional quantities.

This review of the outbreak of puerperal fever in

1840 may be regarded as fairly illustrating the average features of the recurring appearances of that scourge in the lying-in wards of Bellevue Hospital prior to the year 1851. Prof. Clark truly says: "Up to the time when the opium treatment was adopted, peritonitis was a fearful word; a large proportion of those attacked by it died of it." I was one of the resident staff of surgeons of Bellevue Hospital in 1851, and well remember the excitement created when the first case of puerperal fever was announced. To the visiting staff it meant a hopeless struggle with a virulent pestilence; and to the resident staff, the loss of the obstetric service, which was highly prized. Prof. Clark had already, in his lectures, and especially in the Pathological Society, advanced the opinion that opium might prove to be a successful remedy in peritonitis. He related his experience in cases which he saw in consultation with physicians in Vermont, where he lectured during the autumn months. He says in regard to this experience:

"I found that they were treating the disease on the Armstrong plan; that is, bleeding freely and then administering a full dose of opium, as they said, 'to prolong the effects of the bleeding.' In most cases there was a second bleeding and a second administration of opium. . . . I found they were getting better results than we were in New York, and I studied their cases as closely as I could, and reached the conclusion that opium was the curative agent and that it would be safe to omit the abstraction of blood. This conviction grew in strength with every new case, and I saw, with different physicians, several cases. . . . The idea then formed was that to establish the narcotic effects of opium within safe limits, and continue them by repeated administrations of the drug, would cure uncomplicated peritonitis—that a kind of saturation of the system with opium would be inconsistent with the progress of the inflammation and would subdue it. There was no theory to build the treatment on and no explanation of the action of the drug in my mind. What I saw of the action of two full doses of opium was the only foundation for the idea."

The first case of puerperal fever in the outbreak of 1851, in Bellevue, resembled in all of its peculiarities those of previous epidemics. The onset was violent, the symptoms characteristic, and the termination rapidly fatal. The patient was early transferred to Dr. Clark's wards, and there were great anticipations of the success of the opium treatment. The uninterrupted progress of the disease to its fatal termination, in spite of the opium administered, produced a very unfavorable impression upon the visiting physicians as to the alleged value of this remedy. Dr. Clark, however, declared that the opium had not been fairly tested, for it was found that the drug had been given in such very small quantities that no such effects could have been obtained as he intended and desired. Prof. Clark says:

"The drug symptoms to be produced are subsidence or marked diminution of the pain; some or considerable tendency to sleep; contraction of the pupils; reduction of the breathing to twelve respirations in the minute; in the favorable cases a considerable reduction in the frequency of the pulse; a gentle perspiration; an itchy state of skin, or oftener of the nose; absolute inactivity of the bowels, and after a time a subsidence of the tremor and tenderness in them; some suffusion of the eyes."

Three new cases were soon after transferred to Dr. Clark's care, then two more, and then one, making six in all. They occupied a separate ward, and Dr. Clark determined to make a thorough test of the opium treatment. Special nurses were provided, and I was selected as the immediate medical attendant. His instructions were very explicit. He required that I should aim to see the patients every hour; should closely watch the pulse and respiration, and personally see that the medicine was regularly given. In regard to the opium, he stated that I must not be governed at all by the amount administered, but by the effects. The condition of the patient to be secured was that of semi-narcotism; this was to be determined by the degree of stupor and the respiration; the patient must require to be shaken to arouse her to consciousness, and the respirations might fall to twelve per minute, but not below that figure. In concluding his instructions, he inquired if I had ever heard the schoolmaster say, "I will whip you to within an inch of your life?" On being assured that I was familiar with the expression, he said, "I wish you to give these patients opium to within an inch of their lives." Prof. Clark thus describes the method of medication:

"The plan is to begin with a dose that is safe—say two or three grains of opium or its equivalent of sulphate of morphia, and in two hours notice its effects. If any of the opium symptoms have appeared, repeat the dose; if none, increase by one grain, and so on at intervals of two hours till the degree of tolerance in the patient is ascertained. After that the case can be treated by a diminished occupation of the physician's time—two or three visits a day. The dose is to be increased if the opium symptoms diminish before the disease yields, but always to be diminished or discontinued if narcotism is approaching. The duration of the treatment will be sometimes no more than two or three days; it may be a week, or even a fortnight, and in one case the symptoms persisted mildly for forty days, and then yielded. In this case the medicine used was the sulphate of morphia, and the enormous dose reached by steady and graduated increase was one grain and a quarter every forty minutes in a boy ten years old."

The treatment was immediately begun. The opiates were given in the form of morphine, solid opium and laudanum, but the quantity of each was accurately determined by the apothecary and estimated in grains of opium. At the outset, each patient received one grain of opium every hour, for three doses. No effect being perceptible, the dose was increased to two grains every hour and con-

tinued for three doses. Failing with this dosage, the opium was increased to three grains every hour. In four cases, this amount of opium had the desired effect, and it was continued at that rate. In the remaining cases it had to be increased to four grains every hour. One of these remaining cases yielded to this amount and the opiate was continued at that rate. The other, or sixth case, was much more obstinate, and the opium was steadily increased until the dose reached twelve grains every hour. This amount simply secured a light but continuous sleep, from which she readily awoke on placing the hand upon her wrist to examine her pulse. The first four cases continued to receive three grains of opium every hour for some two or three days, when the pulse fell to its normal standard, the tympanites subsided, the tenderness of the abdomen disappeared, and the patients were evidently convalescent. The opium was discontinued; they rapidly recovered, and remained well. In the fifth case, an episode occurred which Dr. Clark mentions, but not accurately. The patient was a tall, young woman, having a pale and somewhat cadaverous face. On the fourth night, while the four-grain doses of opium were being given, the nurse failed to call me at the usual hour and I overslept two hours. On awakening and noticing the time that had elapsed I hastened to the ward. The nurse was sleeping soundly in her chair. The patients were all sleeping quietly, and were apparently doing well, except the fifth. On approaching her bedside, I was struck with her death-like pallor, heightened by the feeble light of a candle on an opposite shelf, her half-opened eyes, her fallen jaw, and absence of pulse. I stood a moment, quite paralyzed at the thought of my neglect and that of the nurse, when I noticed that she gasped. There was an interval, and then another gasp. I counted those efforts at respiration, and found that the fourth occurred just after the minute had expired. I at once aroused the nurse and took active measures to recover the patient from her profound narcotism. After several hours' continuous effort, she was regarded as securely restored. All the symptoms of peritonitis had meantime subsided; the pulse had fallen from 112 to 92 per minute, the tympanites and tenderness had disappeared, and she expressed herself as feeling well. Within twenty-four hours all the symptoms of peritonitis recurred, and the treatment was renewed, three grains of opium being given instead of four. Semi-narcotism was readily produced, and after a very brief period the symptoms again subsided; the treatment was suspended, and she remained permanently cured.

The following notes of one of these cases, contributed by Dr. Clark to Keating's edition of *Ramsbotham's System of Obstetrics*, illustrates the symptoms and progress of the disease while under treatment:

A. N., aged twenty years, married, delivered of her first child October 1, 1851. The labor was natural and of usual duration. Convalescence was not attended by any untoward symptom except a slight diarrhœa. . . . On the tenth day after confinement she was seized with a chill at 10 o'clock A.M.; chill lasted an hour; the abdomen was markedly tympanitic, extremely tender, and the seat of lancinating pains which caused sobbing; pulse 120; respiration thoracic; tongue clean. Ordered solution sulph. morph. (seventeen grains to one ounce of water), ten minims every hour. She slept most of the day and succeeding night quietly, but not profoundly.

Second day; 10 o'clock. Tympanites increased; tenderness somewhat diminished; extreme thirst; occasional vomiting of a bright-green fluid; bowels quiet; lochia had ceased previous to attack; pulse 120. Other symptoms as before. It was obvious that not much impression had been made on the disease in the first twenty-four hours, and the solution was given (ten minims) every half-hour. This produced sleep, and by evening the pulse had fallen to 90.

Third day. Tympanites and thirst continue; retention of urine; intellect rather obtuse. Other symptoms as before. The morphine solution was now increased to thirty minims every hour. These doses were continued from noon till six or seven o'clock in the evening, when the signs of narcotism became rather alarming. She slept heavily; was roused with difficulty; would not reply to qustions; pupil contracted almost to a point; pulse 68 and respiration seven in the minute. The opiate was suspended, and tablespoonful doses of strong coffee administered. The narcotism continued for six or seven hours, and gradually subsided.

Fourth day. Tympanites diminished; tenderness markedly less; features composed; intellect rather dull; pulse 78; tongue dry in the centre; green vomiting occasionally; slight hysterical symptoms; respiration 15. Morph. sol. resumed, ten minims every half-hour. Narcotism recurred at about the same hour as last evening, in which the sleep was very profound and the respiration only five in the minute. Treatment as on the previous evening. Toward morning these unpleasant effects of the medicine passed off.

Fifth day. The tongue was dry and slightly brown, but patient declares that she feels quite well; tympanites has nearly disappeared; no pain nor tenderness; pulse 80 and respiration 15; some appetite. . . . At 11 A.M. morph. sol. resumed, ten minims every two hours. At night, wakefulness and pain in the abdomen; three grains of opium every hour, under the influence of which she slept quietly.

Sixth day. Sleeps most of the time; easily roused, but answers questions slowly and with an effort; tongue moist, and not furred; tenderness that recurred last night less; pulse 80; still vomits green fluid; treatment continued.

Seventh day. Symptoms all improved; one grain of opium every hour.

Eighth day. Abdomen soft and free from pain or tenderness; thirst slight; says, "I feel so much better;" was decidedly convalescent. From this time the opium was continued in gradually diminished doses. The bowels were not opened until the thirteenth day; after this, treatment was discontinued, and she was discharged in a few days in her usual health.

The sixth case proved to be an anomaly in the tolerance of opiates. During ten days the treatment was persevered in, the pulse remaining at about 120, the respirations 34 to 36, the abdomen greatly

distended and tender to the touch, with lancinating pains, the features pinched, perspiration at intervals, etc. During these twelve days, this patient took the equivalent of 1950 grains of opium, and she neither vomited during that time nor did she have an evacuation of her bowels. No effort was made to secure an evacuation of the bowels during the opium treatment.

"Purgatives are entirely inadmissible. The bowels should be left entirely at rest till they recover their muscular tone; then they will expel first the gas and then the fæces; or if, after the inflammation is subdued, they do not move of their own accord, injections are admissible. I have often left the bowels absolutely inactive for fourteen days without any recognizable consequences."—PROF. CLARK.

At no time was the patient so narcotized that she did not awaken when anyone placed a hand on her wrist. She remained in the hospital as an assistant in the laundry for six months after her recovery, and during that time she was in excellent health. The following extract from the records shows the course of treatment of this patient:

"The treatment was commenced at 10 A.M. with two grains of opium hourly; at 2 P.M. dose increased to four grains; at 3, four grains; at 4, five grains; at 5, five grains; at 6, eight grains; at 8, ten grains; at 9, twelve grains; at 11, sol. morph. sulph. one and a half drachms; at 12, one drachm; at 1.30 A.M. respirations 6; at 6 A.M. respirations 12, twelve grains of opium; at 10, sol. one drachm; at 12 M., opium, twelve grains; at 1.30 P.M., sol. two drachms; at 2.30, two drachms; at 3.30, opium, twenty-four grains; at 5, twelve grains; at 6.30, sol. two and a half drachms; at 7.30, two drachms; at 9, opium, fourteen grains; at 10, sixteen grains; at 11, seventeen grains; at 1 A.M., sol. two and a half drachms; at 2, sol. four drachms; at 3.30, opium, twenty grains; at 4, sol. two and a half drachms; at 5, three drachms; at 6, three and a half; at 6.30, opium, ten grains; at 7, sol. three and a half drachms; at 8, opium, twenty-two grains; at 9.30 sol., four drachms; at 10, sol. three drachms; at 11.30, three drachms. On one day she took the equivalent of 472 grains of opium."

Such is my testimony to the facts which Prof. Clark gives in his articles. Subsequently I had abundant opportunities to witness the opium treatment of peritonitis, both puerperal, traumatic and idiopathic. The recovery of these six consecutive cases very naturally produced a profound impression upon the resident and visiting physicians of Bellevue. As the cases were all typical of those ordinarily occurring at that hospital, and as opiates were the sole remedies employed in their treatment, it was apparent that a new era in the therapeutics of this scourge had begun. From this time forward opium continued for twenty years to be the chief remedy employed in peritonitis in Bellevue Hospital, and with satisfactory results. Opium in peritonitis came into general use in the city. Prof. Clark states that "in private practice the drug has been perhaps more curative than in the hospital." He adds: "I have seen many cases in consultation, and a decided majority have recovered."

It is apparent from the preceding review that previously to the introduction of the opium treatment, puerperal peritonitis was a most destructive disease in Bellevue Hospital when treated by the methods employed prior to 1851. With the introduction of opium, employed as the chief remedy, and in the manner directed by Dr. Clark, the same disease, occurring under the same circumstances, became so manageable that a mortality of 90 per cent. was reduced certainly 50 per cent. These facts lead inevitably to the conclusion that the opium treatment of peritonitis has a place in the therapeutics of that affection of no small importance. Precisely what that position is, it is, perhaps, still impossible to state. Prof. Clark remarks that he cannot explain the curative action of opium in peritonitis. Prof. Barker, who has had a large and varied experience in the treatment of puerperal peritonitis in Bellevue, speaking of the same question, says:

"The most important of all agents in controlling and arresting this disease is opium in some form. Let us see what we gain by its use. The peristaltic movements are retarded or arrested, and thus the inflamed tissues have absolute rest; pain is annulled; emotional excitement is allayed; the nervous system is tranquillized; sleep is secured; and thus the depression of the vital forces resulting from the shock of the attack is lessened."

Prof. Clark regarded opium as valuable chiefly in simple, uncomplicated peritonitis. He says:

"When the inflammation of the uterus is the dominant lesion, and is purulent, opium has little or perhaps no control over its fatality; but in the cases in which peritonitis is the ruling lesion, if begun early, it will show its power."

And yet the preceding history of the six puerperal cases which recovered resembled in all their essential peculiarities the fatal cases reported by Vaché, in many of which the inflammation of the uterus and its appendages was the dominant lesion. Of course, we cannot positively assert that the cases which recovered had other lesions than those of the peritoneum, but six consecutive cases of peritonitis in the lying-in wards of Bellevue Hospital without any inflammatory changes of the uterus and its appendages would, at the period under review, have been regarded as impossible. Especially would this be true in an outbreak the first case in which rapidly proved fatal with such complications. We would seem, therefore, to be justified in the conclusion that several cases made a satisfactory recovery at that time in which the inflammation of the uterus and appendages was the dominant lesion.

Happily, in these latter days antisepticism has greatly diminished the frequency of this formidable disease, especially the puerperal form, and in the

meantime the remedial measures have been markedly increased. This improvement is due to a more accurate knowledge of the functions of the peritoneum and of the existence and action of pyogenic organisms. The researches of Wegner, Grawitz and Pawlowsky have determined that the peritoneum is quite tolerant of simple wounds which heal readily. As a lymph-sac, the stomata in its walls opening into the surrounding lymphatics, the peritoneum is almost directly connected with the spleen, pleura and other organs, thus admitting of rapid general infection by peritonitic microbes when they exist in large quantities. The healthy peritoneum is not sensitive to injected fluids, provided they do not contain putrefactive bacteria, but even these organisms may be injected in small quantities, without harm, as they are quickly absorbed and destroyed or excreted; but if the peritoneum has been previously irritated or otherwise injured, pathogenic microbes are far more effective. It appears also that chemical irritants cause inflammation with hæmorrhagic effusion, but without lesion of the intestinal walls or the penetration of microbes into the peritoneal cavity. Peritonitis, therefore, not due to putrefactive organisms, is local, while peritonitis produced by such pathogenic microbes as the staphylococcus aureus is rapidly fatal by general infection. Nearly coincident with our more intimate knowledge of the causes of infective peritonitis was the discovery of the means by which these pathogenic organisms can be destroyed. As these destructive agents must be applied directly to the microbes, the surgeon was brought into this field of therapeutics, and has here won some of his most brilliant victories, by boldly opening the peritoneal cavity and cleansing it with antiseptic solutions; but as there are many types of peritonitis, having their causation in different conditions, some being of a microbic and others of a non-microbic origin, it is as yet by no means certain where the line is to be drawn between the medical and surgical treatment of this disease. It is probable that the physician and surgeon will more nearly meet the multiform types which this affection presents by acting in concert, and discreetly employing the measures which each possesses according as they may jointly interpret the indications. Whatever may be the possibilities of the art of surgery in the treatment of peritonitis, and they are by no means inconsiderable, the question may pertinently be asked, Has any remedy, or combination of remedies, in the hands of the physician given results equal to or better than opium in a series of cases similar to those recorded in this paper? Prof. Fordyce Barker, who was for many years one of the obstetric physicians to the maternity wards of Bellevue, remarks, in his work on *Puerperal Diseases*:

"In this hospital, for more than twenty years, the opiate treatment . . . has been chiefly relied upon in peritonitis . . . and I do not hesitate to say that the records of this hospital will demonstrate a success in the treatment of this disease far beyond that which has ever been secured by any other method."

Is not this declaration as unimpeachable to-day as when it was first published, in 1874?

FURTHER STUDIES IN MALARIAL DISEASE.[1]

The Parasites and the Forms of Disease as Found in Texas.

BY GEORGE DOCK, M.D.,
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SINCE Macculloch (in 1827) applied the Italian colloquialism *mal' aria* to the hypothetical marsh miasm, the convenience of the term, in the absence of any accurate knowledge of the nature of that poison, has been universally recognized. By a familiar figure of speech, the term has come to be used as expressing the morbid processes set up in the human organism by the paludal virus. The reasons for uniting processes which differ so much in their clinical phenomena as, *e. g.*, common intermittent, comatose and hæmaturic fever, have been so frequently and so well stated that repetition is unnecessary. Since we have learned to know the *contagium animatum* of the disease in the organism most commonly known as the *plasmodium malariæ*, it seems expedient to drop the use of the word malaria as expressing the cause, but to use it as synonymous with the process itself. This is, in fact, done by leading writers in Italy and Germany, and to some extent in this country, and, though it may be deprecated by linguistic purists, will outlast the objections of the latter.

On account of the technical difficulties in the determination of the precise biological nature and life history of the parasites, the study of malaria must be followed on a number of distinct lines having a common goal. All the diseases classed as malarial—not considering the illegitimate use of the word at the hands of careless diagnosticians—in all parts of the world, must be re-studied, with the object of determining the presence or absence of the parasites. The organisms themselves must be studied at the same time, in order to fill out the gaps in our knowledge of their nature and mode of growth.

In order to obtain an accurate knowledge of the malarial parasites, it is necessary to observe them for a long period, in various kinds of cases, and during all the stages of the disease. In this way one learns in time how to explain some of the discordant views of various observers, and acquires a toleration for those he cannot reconcile with his own experience.

[1] Read, in abstract, before the Section of Practice of Medicine and Physiology of the American Medical Association, at Washington, May 7, 1891.

For some time I have worked on the lines indicated, and the results seem important enough to warrant their publication now.[1]

The studies now under consideration include a period of one year since the publication of some earlier observations. In this period I have examined, in the manner to be described, the blood of seventy-six persons. In order to have the greatest objectivity, in almost all cases the blood was examined before ascertaining the clinical peculiarities of the cases, and the nature (if malarial) and course of the disease predicted from that. If the examination be made at a favorable time a demonstration can be made more brilliant than in any other field of medical diagnosis. Naturally, I was most frequently called to examine cases of malaria, but a history of chills, of suddenly developing fever, of paroxysmal course of symptoms, or cachexia, sufficed to call forth a microscopical examination of the blood.

In 41 of the cases the parasites were observed. The other 35 cases included dysentery, influenza, phthisis, sepsis, enteric fever (four cases, with two autopsies, one of each having been diagnosed as malarial fever), intermittent neuralgia, and miscellaneous cases, one of which had been considered as malarial costal periostitis. The subsequent histories confirmed the exclusion of malaria. Owing to the occasional admission of a number of cases of malarial fever at the same time, some were missed, but no selection was made at such times. On the other hand, a number of cases were encountered which the blood-examination showed to be malarial, but in which the diagnosis would not have been made without it, or the verdict of time and the therapeutic test.

Such control observations are, therefore, of great value. Through them we may widen, and shall certainly deepen, our knowledge of malarial disease.

In my investigations I examined the blood from the finger-tip, at once after withdrawal, by a Zeiss one-twelfth inch homogeneous immersion lens, Oc. iv. In case the result was negative, another examination was made before the administration of remedies. This was done to meet the theoretical objection that if the examination is made just after the segmentation of the plasmodium, the small forms (spores) may be overlooked.

In 30 cases in which parasites were found the patients were put to bed and the temperature taken at intervals of two or three hours. No specific medication was given until the first paroxysm had passed, except in cases which seemed to threaten life. Observations were made at frequent intervals on the fresh blood, and cover-glass preparations made in special cases.

Origin of the Cases.—The diverse origin of the cases studied by me adds to the importance of the observations. Six cases originated in Galveston, and, with one exception—a case of severe remittent fever—include all of local origin admitted to hospital during the year. This indicates a peculiarly favorable locality for investigating the etiology of malaria, to which I hope to give special attention.

Seven patients came from various parts of tropical America, and were seen within a short time after leaving the place of infection. Six of these I have already reported;[1] the seventh, from the northern side of the Isthmus of Tehuantepec, was one of malarial cachexia with crescents only. Negative observations, probably at the hands of inexperienced investigators, have led to the statement that the tropical malarial fevers differ essentially from those of temperate zones—a statement so at variance with the views of judicious clinicians familiar with the disease as to require more than ordinary proof.

The rest of the cases originated in various parts of the interior of Texas, and in that notoriously malarial part of Louisiana, on the Gulf of Mexico, between the Sabine and Mississippi rivers.

Influence of Season.—Malaria exists in my field of observation all the year round, but there is a spring maximum of intermittent, some of considerable severity, and an autumn maximum, with remittent fevers and atypical cases of all kinds, from the mildest to those which kill in a few paroxysms.

In the season now reported, the long dry period in the late spring and the almost continuous rains in the beginning of this year, coincided with a decrease or total absence of cases. In June, there were two cases; in August, one; September, two; October, eleven; November, twelve; December, four; February, two; March, three; April, four.

On a Large Plasmodium, the parasite of tertian fever of Golgi.—In thirteen cases of the present series a large plasmodium was met with. In ten cases it was the only form; in three, crescents and a smaller plasmodium were found.

These forms begin as amœboid bodies about the size of the blood-plates, and when at rest slightly resemble the latter, but can be demonstrated to be within the red blood-corpuscles. Throwing out

[1] Notwithstanding the efforts of clinicians and biologists, no unanimity has been reached in regard to the zoölogical classification of the plasmodium malariæ. That it belongs to the protozoa is certain, with close affinities to the nomads or the sporozoa. The difficulties in the determination of its proper place are due as well to our limited knowledge of the other classes as to that of the form in which we are now interested. For this reason it is advisable to work up the life history of the organisms in the blood as completely as possible—not neglecting, of course, attempts at cultivating them—and at the discovery of the form in which they exist outside of the body. For this two things are necessary: a full knowledge of the characteristics of the blood in health and disease, as seen under high powers, and some acquaintance, even if at second hand, with the morphology and physiology of the protozoa.

[1] Fortschritte der Med., No. 5, 1891.

pseudo-podial processes they gradually increase in size. This is accompanied by the formation of pigment, usually in yellowish-red to reddish-black rodlets. As they grow larger the invaded red corpuscle flattens out and becomes paler. Finally, the corpuscle is almost or entirely destroyed, and the plasmodium enters on the stage of segmentation.

That, at least, is the usual, or, if we may use another term, normal sequence. But the plasmodium may escape from the corpuscle at any stage, and, at any time, either in the corpuscle or free in the plasma, can undergo segmentation. In an earlier communication[1] I described the peculiarities of some of these forms, and many times in the present series have been able to confirm those observations.[2]

In seven of the ten unmixed cases I was able to study the typical segmentation of the organisms. In none of these did I encounter the precise form described as the usual one by Golgi, and which I had seen in previous seasons.

Most of the segmenting bodies of this series resembled those described by Golgi as having the second mode of division.[3] In this the pigment is gathered in one or several small heaps, while the whole body of the plasmodium becomes separated into small round or oval bodies, which are ultimately liberated.

On account of their minuteness these spore-like bodies are very difficult to study. Whether they are supplied with flagella, as seems probable, or whether flagellate amœba forms issue from them cannot yet be said. Certain it is, that in one way or the other, in a comparatively short time they infect in turn red corpuscles, and so continue their species for another generation. With the ordinary solutions of methylene-blue the spores stain on the periphery, leaving a clear, round, central space.

Occasionally I have seen the forms of segmentation described and figured by Celli and Guarnieri,[4] Councilman,[5] Dolega,[6] and Plehn,[7] and which, on account of technical difficulties, cannot be reproduced here. Sometimes a number of segmenting bodies, differing slightly in shape of spore and arrangement of pigment, were met with in a single case and in a single preparation.

The conclusion has been forced on me that the differences in the details of the segmentation are of minor importance. Similar variations in the appearances and details of the reproductive phase, depending on slight changes in the environment, are not uncommon among other protozoa.

The more regularly segmenting forms of these parasites require about forty-eight hours to complete their development. In only one case have I had to do with a pure tertian, but in six cases of quotidian type I have been able to recognize the existence of generations in different states of development. Predictions based on this fact were verified by the result of segmentation of the larger forms in the next paroxysm, and afterward by the gradual development of the smaller forms.

The tertian case gave the most striking example of the time of development and succession of generations. The diagnosis of tertian was made at noon on the day of apyrexia, being the day after the first chill in the attack, and so, from the anamnesis alone, it being impossible to determine whether it was to be tertian or quotidian. All the many plasmodia found measured from one-half to five-eighths of the diameter of a red cell, so the acme of the next paroxysm was predicted for twenty-four hours later. The temperature rose slowly from midnight to 10 A.M., when it was 101°. Half an hour later there was a slight chill, and the temperature rose rapidly to 105°, which point it reached between 2 and 3 P.M. At the time of the chill all the forms were large—as large as, or larger, than a normal red corpuscle. Some were beginning to divide after the manner of Golgi's second form. Segmenting forms were present in all specimens for more than two hours, when—though some of the plasmodia had not quite reached that stage—the smallest amœboid unpigmented forms, the results of the segmentation first seen, began to appear in the blood corpuscles.

It is almost needless to say that I recognize a close connection between the reproduction of the plasmodium and the febrile paroxysm. In making this statement we must clearly understand what a paroxysm in malaria really is. It is unnecessary to discuss that now. But in regard to the chill, it must be remembered that even in vernal intermittents, in which it almost always appears, it has no fixed place in the temperature curve. It may take place early in the rise, or it may only occur near the acme. As the result of experience, I have stopped predicting the probable time of a chill, but speak instead of paroxysms only, with some qualification as to

[1] THE MEDICAL NEWS, July 19, 1890.

[2] In one instance the peculiarities were more marked than in any I have seen before. This was in a case of tertian intermittent, in April. Near the acme of a paroxysm a plasmodium, which showed the characteristics of atypical segmentation, escaped from the remnant of a red corpuscle. Its diameter was equal to that of a normal red cell. At once the pigment in the outer zone began to circulate, forming many complete circuits in one direction, then reversing the direction. The pigment in the centre, which outlined three round spaces, was all this time in the "ebullition" motion. Gradually, the spaces became more distinct, and in them appeared the small spherical highly refracting bodies. A few minutes later a long and distinct flagellum appeared at one side, with pigment moving in it. At the end of half an hour all motion had ceased.

[3] Fortschritte der Med., No. 3, 1889.

[4] Fortschritte der Med., Bd. vii., Nos. 14, 15, Taf. iii., Figs. 3, 4, 7, and 10.

[5] Ibid., Bd. vi., Taf. v., Figs. 3, 4; vi., 2.

[6] Ibid., Bd. viii., Taf. v., Figs. 5, 6, and 11.

[7] Aet. u. klin. Malaria-studien, Taf. ii., Figs. 2, 3.

the probable time of the acme. I find the plasmodia reach the maximum size about the time the temperature begins to rise, and that segmentation begins within a period of not more than three to four hours later.

The period of forty-eight hours, though the normal one, so to speak, is by no means invariable, as we can easily see in cases with anticipating or postponing paroxysms. I have seen the time shortened by twelve hours. Causes ot which we have as yet no definite idea may so alter the rapidity of the development that there is no ground for denying that the development of single generations may produce quotidian or quartan paroxysms. Postponing paroxysms may be supposed to be caused by some delay in the development of the spores, though the opposite process cannot so easily be applied to anticipating paroxysms, which are probably due to the development of generations displaced, so to speak.

The severity of symptoms in my cases has been in relation to the number of organisms found. The severity, however, of these cases, aside from the anæmia in protracted cases, does not compare with that in the cases accompanied by small plasmodia, to be described later. The seven cases in which the large and typically segmenting plasmodia occurred were of intermittent type. In an eighth case in which this form was found the patient gave a history of (vernal) intermittent, but the case could not be followed up.

Two of the three cases in which this form was found with the small form were also intermittents. One of them, from Tehuantepec,[1] was a tertian with chills at 3 A.M. and acme at 7. The other, from Nicaragua,[2] quotidian without chills, with paroxysms in the afternoon. The third was a fatal case with subnormal temperature.

The two remaining cases belong to a class to which I have called attention before, and which I believe to be accompanied by the plasmodia of peculiarly atypical development. In these cases predictions based on the forms discovered were verified. The patients were kept under observation a week each, without quinine. The temperature was not measured, but there were no chills and no perceptible fever. The symptoms were only of the same vague character as those alleged by the patients as existing for some time, viz., pain in the bones, loss of appetite, headache, with anæmia.

Unfortunately, such patients will not remain in hospitals long enough to have careful observations made. They offer a very interesting field for observation, and the idea of their dependence on the atypical plasmodia, if confirmed, will give a scientific explanation of certain forms of malaria otherwise difficult to understand.

The Flagellate Bodies.—In the present series of cases I had abundant proof of the statements I made a year ago in regard to the origin of the flagellate organism. Out of the thirteen cases in which the large plasmodia were found, flagellate bodies were discovered in seven. Five of these were acute vernal intermittents—recurrent attacks which could be traced to infections in the last summer and autumn. Two were cases in which small plasmodia and crescents also occurred. Of the other six cases, three were seen only once. In one case the bodies were found in the third paroxysm of the season. In all cases I was able to observe their development from the atypical endoglobular plasmodia, after becoming free in the plasma, and within a short time after the exit from the corpuscle was observed.

The formation of the flagella while the body is still in the red blood-corpuscle, which I reported a year ago, had already been observed by Celli and Marchiafava, as I did not know at that time. It has since then been confirmed by Plehn.[1] It makes the parallel between these bodies and the *polymitus malariæ* of Danilewsky complete. From the observations of Plehn and myself, and of Antolisei,[2] we may assume as settled that the most perfect and characteristic of the flagellate bodies are closely related to, in fact derived from, the parasites of intermittents, not only in tropical and subtropical countries, but also in those temperate latitudes where the less severe but more typical forms of malaria occur. It is also beyond question that they appear very early in the course of malaria. It is evident, therefore, that when Golgi asserts that the flagellate bodies may represent a transition stage in the development of crescentic bodies, he must have conditions in his field of observation very different from those in many others. I have never seen crescents appear in the spring malarial fevers, and I shall show later that they are most frequent in cases in which flagellates are not to be found.

I have before this showed a comparatively greater resistance to specific remedies on the part of the atypically segmenting bodies and flagellates as compared with the more regularly segmenting forms, and suggested on that ground the probability of their being resting-stages of the organism. The facts have been confirmed by several observers, but I no longer, in the light of a wider experience, maintain the hypothesis. The reason why they, even when free in the plasma, resist the action of

[1] Fortschritte der Med., Bd. ix., No. 5, p. 191.
[2] Loc. cit., K. Sch.

[1] Loc. cit.
[2] Riforma Med., 1890, Nos. 26, 27; Centralb. f. Bakt., etc., Bd. ix., No. 12.

quinine is a question greatly in need of a scientific explanation.

It is unnecessary to consider in detail the clinical features of cases in which the large plasmodia are found. One or two points only may be mentioned.

The blood is characterized by the tendency of the invaded blood corpuscles to flatten out, sometimes becoming as much as one and a half to twice the diameter of a normal corpuscle. An increase of leucocytes—large lymphoid and eosinophile—can often be noted at the time of the acme of the paroxysm.

Leucocytes containing pigment are rare. In not a single case of the present series were they found.

So far as we can tell from our present methods of investigation the various forms of this large plasmodium represent a single species. It is a kind having the widest distribution, having been found in all parts of the world when looked for. I myself have found it with the same forms in Philadelphia, in cases from various parts of Texas and Louisiana, and from Tehuantepec, Nicaragua, and Panama.

It is also found in all seasons in which malaria prevails. It occurs not only in cases of primary infection, but in the vernal recurrences of mixed infection, to be mentioned later, it is the only form to be found.

These facts are especially interesting in connection with the conclusions reached by Hirsch, as the result of his monumental research in the literature of malaria:[1] "Intermittent malarial fever, by far the most frequent and widespread form of malarial disease, is met with everywhere, and at all times wherever the disease prevails endemically or epidemically."

This form also shows a remarkable ability to remain latent in the body. As I have said, all the vernal cases so far studied this year have been recurrences of fevers acquired last year. One, with the longest free interval, was in the case of K. Sch., reported as a tropical case.[2] The large plasmodium was found in his blood for the last time December 14, 1890. Crescents were last noted December 22. The patient was kept on large doses of arsenic, quinine, and iron until December 29. He had fully regained his strength and gained very much in weight, though still very anæmic. Treatment was stopped and the man assumed the position of porter in the hospital. Malaria never occurs in the part of the city in which the hospital is situated, and in the months of January and February the only other case I saw was one from the tropics.

The following shows the course of the recurrence:

"*February 26*, 3 P.M. The patient, K. Sch., complains of complete loss of appetite. Says that yesterday, about noon, he felt cold, without a rigor; later had fever, headache, pain in extremities. Temperature 99.4°. Many endoglobular plasmodia, not fully developed. Predicted paroxysm for next day. The temperature fell to 97.4° at 10 P.M.

"*27th*. Temperature rose from 98.8° at 6 A.M. to 104.8° at 10. At 10 a rigor lasting half an hour. The temperature remained at the maximum for two hours and then fell. During the rise and acme the blood examination showed the process of segmentation in the parasites. During defervescence the patient received 20 grains of quinine in solution, in four doses.

"*28th*. Patient feels well. In the blood a few free bodies."

After this no more organisms were found until March 13th. The patient was given tr. cinchona comp. ʒij and five drops of Fowler's solution daily; the temperature ranged from one to two degrees above normal.

"*March 13*. Felt chilly at noon. At 4 P.M. temperature 100°. In the blood a few plasmodia in early stages.

"*14th*. Temperature normal. In the blood plasmodia larger than yesterday. A few free flagellate bodies. Predicted paroxysm for following day, but gave 10 grains quinine hypodermically to abort it.

"*15th*. No chill, but temperature rose to 99.6° at noon. A few free bodies found in the blood. Quinine 20 grains."

After that there were no further symptoms, and the patient left the hospital, having obtained work outside.

In other cases there were intervals almost as long. They indicate the existence of a resting-stage of the organism, the precise nature of which and the causes determining its return to the active stage must be the task of future investigations.

(*To be concluded.*)

[1] Hist. Geog. Path., i. 167. [2] Loc. cit.

TURPENTINE AS A GERMICIDE AND ANTISEPTIC.

BY W. SCHLEPPEGRELL, A.M., M.D.,
NEW ORLEANS.

ALTHOUGH the oil of turpentine (*Oleum Terebinthinæ*, U. S. P.) is not unknown as an antiseptic and germicide, its insolubility in water and its irritating properties have hitherto made its use impracticable. That it has its special uses, however, in this connection I have had abundant testimony.

It is a well-known fact among naturalists, that, if the air of a cabinet be impregnated with the vapor of turpentine, the specimens are safe from the ravages of moths and other intruders so long as this condition of the air of the cabinet remains.

Having learned the advantage of turpentine in

preserving entomological specimens, I concluded to try its germicidal properties in the cases containing surgical instruments. A bacteriological examination of the cases, made four weeks afterward and compared with the examination of cases not provided with turpentine, convinced me of its efficiency, and I soon afterward applied the same principle to drawers containing towels, gauze, bandages, etc.

The method is simple. The turpentine is placed in flat, large-mouthed bottles at the bottom of each case or drawer, the volatility of the turpentine causing the vapor to impregnate the surrounding air.

Of late I have also placed my surgical instruments, the night preceding an operation, in a flat dish containing oil of turpentine. The instruments are completely sterilized, are not injured by the submersion, and are easily dried by a piece of sterilized gauze or towel. The characteristic odor of turpentine can be removed by ether.

The cheapness of turpentine and the ease with which it may always be obtained, added to its special adaptability in preserving the aseptic condition of instruments, bandages, etc., by its vapor, may make it a valuable addition to the list of our antiseptics and germicides.

I have also used benzole in the above manner. Its greater volatility gives it a more rapid germicidal action than turpentine, but its great inflammability admonishes caution in its use.

A REPORT OF TWO CASES OF EXTENSIVE COMPOUND DEPRESSED FRACTURE OF THE SKULL.[1]

BY THOMAS R. NEILSON, M.D.,

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FROM a number of cases of compound depressed fracture of the skull which have come under my care in my service at the Episcopal Hospital I have selected the two following to report at this time because of their exceptional gravity and as showing the results obtained by prompt operation, thorough drainage, and careful antisepsis:

CASE I.—A lad, Fred W., aged seventeen years, was admitted to the hospital on the afternoon of March 5, 1890. A few moments before admission, in attempting to jump from a descending elevator in a mill in which he was employed, he had missed his footing and fallen headlong from the fourth floor of the building down the elevator shaft, landing upon a stone pavement in the basement. While being conveyed to the hospital in the ambulance the boy had a convulsion, at the end of which his breathing almost ceased. Reaching the hospital he was taken to the receiving ward, where I was at the time with my resident physician, Dr. F. Rudderow. The patient was completely unconscious, had marked symptoms of compression — widely-dilated pupils, stertorous breathing, etc.—and, beside the head injury, he had a simple comminuted fracture of the left leg and a lacerated wound of the popliteal space.

A moment after he was placed on the bed in the ward he had a very severe clonic convulsion, ending in tonic spasm of the muscular system so long that he became asphyxiated and death seemed close at hand. I ordered a hypodermic injection of atropine to be given and instituted artificial respiration. The color and condition of the patient soon improved and respiration was reëstablished.

A superficial examination of the head showed an irregularly shaped scalp wound, communicating with a depressed fracture of the skull, at the right anterior part of the vertex. I had the patient taken at once to the operating room and placed upon the table, his head shaved, thoroughly scrubbed, washed with alcohol and then with bichloride solution, the ear of the injured side being also well cleansed with the last. Upon enlarging the scalp wound I disclosed a compound, comminuted, and depressed fracture, involving the frontal and parietal bones and extending downward toward the temple. The uppermost limit of the fracture was in the parietal bone, about one inch from the sagittal suture. The region of depression was about an inch outward from this and had an area of some two inches.

Applying the trephine near the posterior border of the latter, I had just got the instrument well set in the bone when the patient had another very violent convulsion. Remembering the respiratory embarrassment which had appeared at the end of the two previous seizures, I saw that everything probably depended upon the immediate relief of the compression, and, several assistants holding the patient as quiet as possible, I rapidly completed the trephining, and with the elevator dislodged the depressed and impacted fragment. Instantly the pupils contracted to the normal, and the patient gazed about him in amazement. In reply to questions he told me his name and where he lived, and realized that he was in a hospital, although he did not know why he was there—in other words, he had no recollection of the accident.

Proceeding with the operation, I found that at the place from which I had removed the depressed fragment of bone the dura mater was torn, and damaged brain substance protruded. Pressing the latter in, I saw beneath the dura, and close to the margin of the wound in it, the edge of a clot. Enlarging the dural opening with scissors, I removed the clot, which was not large, and irrigated the brain with 1:2000 bichloride solution. My attention was then attracted to a slow but constant welling up of blood through the line of fracture (which extended downward on the side of the skull), and, pressing the dura aside with a finger, I found that a quite noteworthy amount of hæmorrhage was taking place. Again using the trephine, I made an aperture in the parietal

[1] Read before the Philadelphia Academy of Surgery, April 6, 1891.

bone near its anterior inferior angle, and at the posterior edge of the line of fracture. Enlarging the opening with rongeur forceps, and pressing the brain aside with the finger, I made a careful search for the bleeding point, but failed to locate it. It seemed, however, that some of the bleeding was coming from the diploë of the broken bones. I traced the fracture into the squamous portion of the temporal bone in one direction, and in the other into the upper border of the greater wing of the sphenoid. Being unable to find any vessel to tie, I decided that under the circumstances the best thing to do was to provide, by drainage, against the accumulation of a basal clot, and accordingly inserted a horsehair drain into the middle fossa, pushing it into position with my finger. This done, the operation was completed by cutting away with the rongeur forceps some irregular projections at the upper end of the fracture and inserting into the brain at the seat of laceration a catgut drain, bringing it through the wound of the dura, which was then closed with a continuous catgut suture. At the situations in which, from the removal of the trephine buttons and the comminuted fragments, defect of bone remained, I placed upon the dura some small pieces of the portions removed, which had been cut up with bone forceps and kept in a hot bichloride solution during the operation. Before suturing the scalp wound, horsehair drains and rubber drainage-tubes were placed so as to drain the wound from each of the four ends of the crucial incisions. The ordinary antiseptic dressings were applied, and, after the wound in the popliteal space had been dressed and the leg placed in a fracture-box, the patient was put to bed. He was perfectly conscious and rational, and remained so throughout the subsequent history of the case. The treatment ordered was an eighth of a grain of calomel every three hours without opium, and the diet for the first three days consisted of a pint of milk in the twenty-four hours. From the fourth day the quantity was gradually increased, and later a more liberal soft diet was allowed.

Immediately after the operation the temperature was 99⅘°, and the respirations 36. Four hours later the former had risen to 100⅘°, while the latter had fallen to 26, afterward descending to the normal, and there remaining. On the morning of the next day the temperature was 99⅘°. At my visit I found that the dressing was quite saturated with blood and accordingly renewed it. On the morning of the third day the temperature was 99°, but it rose in the evening to 101°. An enema was then given and an intestinal evacuation secured, and by the next morning the temperature had again fallen to 99°. After that it remained practically normal, only once reaching as high as 99⅘°.

A fresh dressing was applied on the fourth and one on the eighth day, the rubber drainage-tubes being removed on the former and the intra-cranial and superficial horsehair drains on the latter, there being no discharge at that time.

The wound healed promptly, except at the spot where the brunt of the force of the fall had been received, and here, after a few dressings, the process of granulation was established and soon completed. When I went off duty at the end of March the patient was perfectly well, so far as the head injury was concerned; his broken leg, however, in the union of which there was some delay, kept him in the hospital until the end of May, at which time he was discharged, recovered.

Case II.—L. —, aged forty-two years; admitted to the hospital on the afternoon of January 23, 1891. While at work in a shipyard he was struck on the top of the head by the crank handle of a very heavy crane, which broke while he was standing beside it. He was taken at once to the hospital, and, happening to be there at the time, I saw him immediately after his admission.

On examination a scalp wound was seen on the vertex anteriorly, to the left of the median line and communicating with a comminuted and depressed fracture, from which a good deal of arterial blood persistently oozed. The left upper eyelid was swollen and discolored by effused blood. The patient was conscious and gave his consent intelligently to my proposition to operate. He complained only of soreness in his head and a sense of chilliness, his temperature being subnormal.

I had the head immediately shaved and cleansed, the wound irrigated with bichloride solution, a temporary wet bichloride gauze dressing applied, and hot-water cans placed about the patient, and waited a short time for reaction to set in.

In about an hour and a half, the patient's condition being more favorable, I had him etherized, the head again thoroughly cleansed, as well as the ear of the injured side, and then enlarged the scalp wound by a crucial incision and exposed the depressed part of the fracture. The line of fracture commenced in the frontal bone in the median line and extended downward and outward obliquely across the coronal suture into the parietal bone, seeming to go as far as its lower border. Cross lines of fracture made several comminutive fragments, and one of these, a large one, was driven firmly down at a point about two inches from the median line. I applied the trephine on the parietal bone at the posterior margin of the depressed fragment, and, enlarging the opening with the rongeur forceps, elevated the fragment, which came away together with some smaller pieces which were wedged in with it. One of the latter had penetrated the dura within half an inch of the superior longitudinal sinus, and from the irregular tear injured brain substance protruded. After irrigating the latter carefully with bichloride solution, I proceeded to inspect the rest of the injury, and, pressing the dura aside with my little finger, saw that arterial blood was welling up from the side of the cavity of the skull, and that a large clot was forming between the dura and the bone. Removing this I was startled by a free and rapid flow of arterial blood, and began to enlarge my opening in the skull with the rongeur forceps, but finding them rather slow I laid them aside and trephined at the anterior inferior angle of the parietal bone, having first extended my incisions in the scalp sufficiently to obtain free access to the locality. On removing the button I exposed directly in the centre of the opening a large branch of the middle menin-

geal artery, which had been torn across and was bleeding freely. The opening made by the trephine being too small to enable me to secure the vessel as I intended, by including it in a suture in the dura, I had to gain more room by using the rongeur forceps, in the meantime getting my resident physician, Dr. L. H. Adler, Jr., to pass a finger from the upper opening, between the dura and the bone, and to make pressure upon the bleeding point. While cutting with the rongeur forceps, I found that another line of fracture, extending from the lower part of the frontal into the squamous portion of the temporal bone, made another large comminuted fragment, which became loosened and was removed. Having gained sufficient space, I was about to secure the bleeding vessel in the manner alluded to, when it was discovered that the needle, which was the only one of appropriate size in the hospital, had been mislaid, and I was obliged to apply the ligature with the assistance of the hæmostatic forceps, which was successfully accomplished with a little care and gentleness. We then discovered that this had but partially controlled the hæmorrhage, and I made further search in the region of the spinous foramen of the sphenoid bone, thinking that perhaps the main trunk of the middle meningeal was injured, but, upon pushing the brain aside, I found that this was not the case. My patient being in a not very favorable condition, I decided to trust to pressure, by means of strips of iodoform gauze, for controlling the flow of blood. Taking several narrow strips, they were inserted one after another into the side of the middle fossa of the skull, the ends being left projecting from the temporal end of the wound. Before closing the latter I endeavored to suture with catgut thread the wound in the dura mater near the superior longitudinal sinus, but found that there was so little of the membrane left toward the side of the sinus that the stitches would not hold. Therefore, having inserted a catgut drain into the lacerated brain substance, I placed over the tear in the dura another compress of iodoform gauze, taking the ends of the strips out of the extremity of the wound at the median line. A rubber drain having been laid across the wound in both directions, and some fragments of bone thrown upon the dura at the position where the greatest deficiency of bone existed, the wound was hastily sutured and an antiseptic dressing applied, the ear being well dusted with iodoform and a dossil of bichloride cotton placed in the meatus.

The patient was put to bed, an ice-bag applied over the dressing; he was given one-fourth of a grain of calomel with one-eighth of a grain of opium every three hours, his diet consisting of one pint of milk daily. He remained conscious and manifested no observable paralytic symptom. For the first three days the temperature, at its highest, reached 101°, and only twice thereafter was it above 100°. The dressing was changed for the first time on the third day, when it was found saturated with a sanguinolent discharge. It was renewed again on the fifth day, being again soiled with bloody drainage. On the seventh day acute symptoms of ptyalism developed and the calomel was discontinued. That night and the following one the patient was somewhat delirious. On the fifth and eighth days the iodoform compresses were removed. The drainage-tubes were gradually shortened and at subsequent dressings finally removed. The wound healed quite promptly, and the patient was allowed to get out of bed for the first time on the 4th of March.

I asked my colleague, Dr. Albert G. Heyl, of the ophthalmic staff of the hospital, to examine the patient's eyes, as he has frequently done in other cases of cerebral injury in my wards. He reported finding no lesions of the fundus of either eye, but that there was diplopia due to paralysis of the external rectus muscle of the left, which he thought might have been due to orbital ecchymosis. This symptom, diplopia, is the only remaining inconvenience which the patient suffers. He was discharged from the hospital shortly before the end of March.

ORIGINAL LECTURES.

THE HEART: ITS MURMURS, THEIR DIAGNOSIS AND TREATMENT, AND THE ACTION OF THE CARDIAC TONICS AS A CLASS.[1]

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LECTURE II.

Gentlemen: Last week we reviewed the valvular lesions implicating the left auriculo-ventricular orifice. To-day I propose to discuss those murmurs which are produced at the aorto-ventricular outlet. First of all, however, I desire to show you a patient who has three well-defined cardiac murmurs, and one that is less distinctly marked, that you may appreciate how easily these murmurs can be recognized and placed, by following the topographic scheme which I have arranged for locating the point of maximum intensity and the direction of transmission. Having settled these two points accurately, we are enabled to say just what the lesion is, and then to add all the other combinations that are commonly given in teaching the physical diagnosis of cardiac murmurs. As, for instance, having decided that a mitral regurgitation is present, we can say that there is a systolic murmur at the apex, that it occurs with or takes the place of the first sound of the heart, and that it is synchronous with the pulsation of the apex and radial pulse, etc.; but we are not compelled to confuse our mind with all these conditions before we decide as to the presence or absence of an abnormal cardiac sound. By studying these areas in routine order, and deciding as to whether abnormal sounds existed or not, and determining the direction in which they were transmitted, I have been able to verify my diagnosis at the post-mortem in almost every instance in which the opportunity has presented for an examination after death, until now I feel quite confident in regard to the diagnosis in this class of lesions. Without a large experience, however, in the post-mortem room, we have absolutely nothing upon which to rest

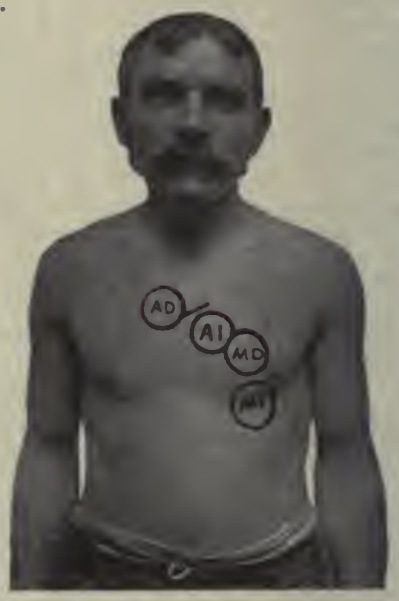
[1] A series of lectures delivered at the New York Post-Graduate Medical School and Hospital.

the certainty of the diagnosis that may be made. Unfortunately, too many of us are compelled to go through our whole medical career without ever having had the opportunity of personal and practical training in this most important branch of medical science—the combined clinical and post-mortem work. The more frequently we can place ourselves upon record as to the diagnosis, and have it confirmed or overthrown by the result of the necropsy, the greater will be the probability of obtaining skill in diagnosis.

Our patient, Mr. M. B., aged thirty-three, baker, first came under the observation of Dr. Adolph Zet, one of the instructors in my department, early in September last. At this time he stated that he had not been well for three years. During these years he has had several copious hæmorrhages from the bowels, each lasting about three days. In the intervals between the occurrence of the hæmorrhages the bowels have been fairly regular, but with a tendency to be constipated. He has also suffered a good deal from headache and vertigo, the latter especially after running up stairs. He has become very anæmic, and has developed considerable œdema of the lower extremities. Our patient has also suffered a little from dyspnœa, but has had no troublesome cough. His tongue is coated, pale and flabby. At one time, for a few days, he spat up some blood; aside from this, there is no evidence of hæmorrhage, either from the lungs or stomach. There is no history of scarlet fever, rheumatism, Bright's or any of the diseases commonly classed among the causative agents in producing endocardial lesions and valvular defects, with the exception of syphilis. The patient was placed upon laxatives and the heart tonic that we use for these cardiac affections, the formulæ of which will be given when we come to discuss the treatment of these lesions in general. Iron was also administered. The result of the treatment has been to improve his general condition and overcome in part the anæmia. The cardiac murmurs, however, have become more sharply defined, but the mechanical action of the heart has been very much improved. Physical examination, gives the following results: Inspection shows the patient to be somewhat anæmic; though in apparently full flesh, his tissues are soft and flabby. The apex impulse is not well defined or sharply limited. The subclavian arteries, however, are seen to pulsate very distinctly as they pass over the first rib. His respirations are shallow and hurried; the pulse is of the shot or bead-like character. Palpation and percussion yield a comparatively negative result. There is, however, without doubt, a moderate amount of cardiac enlargement, due to hypertrophy or dilatation, or both combined. We shall be able to determine this fact with greater accuracy after an auscultatory examination, for then we shall be able to decide what the exact mechanical defects are, to what degree they have advanced, and how much compensatory hypertrophy or cardiac dilatation has been developed. By percussion alone we may be led into gross mistakes, as I have frequently witnessed in making necropsy examinations. I recall one instance in which a number of gentlemen had examined the case and found, by percussion, a marked enlargement of the heart, but an absence of all other signs and symptoms that would warrant the opinion of cardiac hypertrophy or dilatation. At the post-mortem examination, the heart was found to be unusually small and weighed only six ounces, or one-half the normal maximum weight. Such results, frequently repeated at the deadhouse, have led me to be very sceptical in regard to the diagnosis of cardiac enlargement based upon percussion alone. There are so many conditions associated with the rise and fall of the diaphragm and the adjacent left lobe of the liver, and the expanded and contracted state of the lungs, that percussion at best is an uncertain sign, and very little reliance can be placed upon it in regard to cardiac enlargement. On the dead subject, as practised by the late Professor Alonzo Clark and Dr. Cammann, when everything is still and immovable, accurate results might be obtained, but not in the living subject, when everything is in motion and constantly changing position.

Upon auscultation of our patient, we find within the circle or mitral indirect area, which is lettered M I on our patient and in the chart, Fig. 1, instead of the normal first sound of the heart, an abnormal or blowing sound,

Fig. 1.



called a mitral indirect murmur. Further, we find that this sound is transmitted to the left along the sixth rib, that it is lost at the anterior axillary line, and that it is heard quite distinctly posteriorly, within the circle M I on our patient. Having ruled out the clear first sound of the heart, and heard in place of it at the anterior mitral indirect circle, and also posteriorly, the same sound within the ring M I, we are justified in saying that there is a leakage at the bicuspid valve orifice. As the murmur has not disappeared, although the general anæmia has improved under the treatment, we are confident that organic changes will be found in the left auriculo-ventricular valve if we have an opportunity to examine the patient after death. There is also a faint abnormal sound or mitral direct murmur, heard with greatest intensity within the limited area lettered M D on our patient and in the chart, see Fig. 1. This sound or murmur is of very short duration, and is not transmitted. You may find some difficulty in detecting this murmur, as it is

masked to a certain degree by the aortic and mitral indirect murmurs. But if you listen intently you will catch a decidedly abnormal sound, which is distinctly limited to the circle M D; if you move the chest piece of your stethoscope outside this area the murmur is entirely lost, and you will observe that its character is entirely different from the transmitted sound of the aortic or mitral murmur, with which it might be confounded. Thus we are enabled to decide that a certain amount of obstruction is offered to the current of blood from the left auricular cavity to that of the ventricle. In this particular case I believe the mitral direct murmur is due to the blood regurgitated at the aortic valve, falling into the ventricular cavity and floating up one of the segments of the bicuspid valve, as described in our last lecture. There is also a double murmur at the aortic valve, which you will fully understand after we have studied in detail all the lesions and murmurs that can be produced at the aorto-ventricular outlet. The abnormal sounds developed at this aorto-ventricular orifice are best divided into three general classes: *first*, those due to organic changes in the valve segments and the aorta, or in the substance of the ventricular wall as a whole; *second*, those due to congenital perforations in the segments of the aortic and pulmonary valves; *third*, the so-called hæmic murmurs.

In reference to the etiology of the first class of murmurs engendered at the aorto-ventricular outlet, they are, like those developed at the mitral orifice, due to congenital defects, seriously narrowing the aortic aperture or preventing juxtaposition of the three cusps of the valve, thus producing positive stenosis or incompetency. This form, or the congenital type, however, is exceedingly rare and in all my experience I do not remember to have seen a typical instance of the kind. The most frequent cause of valvular defects at the aortic outlet is secondary change in the segments due to an acute or chronic endocarditic lesion extending to and involving the valve, or the development of an acute or chronic endocarditic lesion on or near the valve, both of which ultimately involve the substance of the individual segments, causing vegetative outgrowths, stenosis, or thickening and retraction, with incomplete closure. Stenosis or incompetency may be developed independently of each other; but more frequently the two conditions are combined. If we comprehend the method by which these lesions in the aortic segments are brought about, it is easy to understand why a stenosis is most likely to be produced first, to be, later, followed by an incompetency of the aortic valve, causing the double murmur. Acute and chronic dilatation of the left ventricular cavity may result in a separation of the aortic segments to such an extent as to cause an incomplete closure of the aortic valve. From my experience of twelve years at the post-mortem table, I am fully convinced that acute dilatation is far more frequent on the printed pages of books than it is in the chest cavity of the individual, either during life or after death. Rupture of a segment of the aortic valve from its peripheral margin to its attached base will cause an insufficiency. Splitting of a segment in this manner is occasionally found at the post-mortem examination, in cases that have suffered from severe falls or crushing injuries implicating the thorax. I doubt the ability on the part of any human being to survive an injury of sufficient magnitude to lacerate the segment of a normal valve. As yet I have never seen any good evidence of such a case. I can recall one instance in which a rupture of an aortic segment was diagnosticated during the life of the patient, subsequently to a slight fall, by a most competent observer; when I made the necropsy, a few years later, the segments of the aortic valve were found to be normal and intact, and the true cause of the murmur proved to be a very small sacculated aneurism of the wall of the aorta just beyond the valve. In over two thousand necropsies, I have found only two cases of indisputable rupture of a cusp of the aortic valve and but one in which a mitral segment was lacerated; but in all three, death followed in a few hours after the reception of the injury supposed to be the cause of the rupture. At the aorto-ventricular aperture, we have an axial line upon which all murmurs are developed and transmitted. The direction of this axis is through the centre of the aorto-ventricular outlet from below upward, from left to right, and from before backward, following the natural course of the blood stream. All the murmurs, therefore, which originate at the aortic valve must necessarily be produced by the current of blood flowing through the now abnormal opening, either in the direct or in the indirect or inverse direction to the normal blood stream, or at right angles to a line drawn obliquely across the sternum opposite the third costal cartilages, as shown between the rings A D and A I in Fig. 1. The position of the aortic valve is behind the sternum, very nearly behind the oblique bar marked on the sternum in the chart, Fig. 1, and on the integument over the sternum of our patient. All abnormal sounds developed at this outlet will be due to an obstruction to the current of blood as it is thrown from the left auricular cavity through it into the aorta, or to the failure of the aortic valve to close tightly and prevent the leakage of blood back into the cavity of the left ventricle, which must of necessity follow incomplete closure.

Having developed the lesion, obeying the common law of production and transmission of cardiac sounds, we find that, if there is a stenosis or obstruction to the current of blood as it normally leaves the ventricle to reach the aorta, a murmur will be produced and heard just beyond the seat of its production, which is at the aortic aperture; or in the second intercostal space on the right side at the sternal margin, as indicated by the circle lettered A D in Figs. 1 and 2. This murmur will be produced by the blood passing in its natural course to the aorta and great vessels, and will be transmitted into them and heard with almost equal intensity over the subclavian arteries and the common carotids in the neck. When it is loud at the seat of development it will also be heard posteriorly where the aorta commences to impinge against the spinal column or over the fourth and fifth vertebræ. On the other hand if there is an incomplete closure of the aortic valve, the arterial tension forces some of the blood back into the ventricle and causes an aortic indirect or regurgitant murmur. This abnormal sound, according to the common law of development and transmission, is heard just below and to the left of the location of the aortic valve, or at the junction of the third intercostal space of the left side with the sternum, as indicated by the circle lettered A I in Fig. 1, and in our patient.

The natural course of the transmission of this murmur is primarily governed by the direction of the blood stream which caused its production and would be downward and forward toward the apex. This is true in part,

FIG. 2.

but, developed as it is, when the ventricle is expanding against the sternum, which is a dense structure, the common physical law of transmission of sound is obeyed, and the murmur is distinctly transmitted down the sternum and often heard with the same intensity over the xyphoid appendix as at the point of origin. In the second variety, or those due to congenital perforations in the cusps of the aortic and pulmonary valves, we often hear the same well-defined physical signs described in the case of an active and positive lesion producing incomplete closure of the aortic valve orifice. Having met with a large number of cases in the clinic in which positive evidence of aortic regurgitation was found, but in which the rational symptoms would not warrant the belief that a large leakage of blood from the aorta to the ventricle occurred, an attempt was made to find in the deadhouse a rational explanation for what at first appeared to be contradictory evidence. This resulted in finding a large percentage of cases that showed in the cusps of the aortic and pulmonary valves numerous little sharp-cut and distinct holes or perforations, located just behind the free margin. These openings varied in size from minute pin-point-like apertures to holes having a diameter of a quarter of an inch or more, and the number varied from one to a dozen. The clinical phenomena became at once perfectly clear; for any one who has attempted to make the valve of a mechanical suction and force-pump work perfectly tight knows how small an aperture will cause a leakage, and the same law unquestionably holds true here. Blood forced through these sharp-cut holes where the valve is tense and the edges in juxtaposition naturally causes a loud sound, while the volume of leakage back from the aorta into the left ventricle is too small to produce any dilating effect upon the ventricle or mechanical interference with the part acting as a pump.

That these apertures are congenital in origin appears to be true from the fact that they are sharply cut, as if punched out of the normal valve, and also from the absence of any of the common evidences of endarteritic or endocardial lesions implicating the valve segments, singly or as a whole. But for the presence of these holes the valve would be absolutely normal. They are also found from intra-uterine existence up to the advanced period of life, which also favors the congenital origin. These perforations have been observed by many, probably by all pathologists, but they are not generally recorded, from the fact that otherwise the valve was considered free from disease and also because they were regarded as of no particular account. I have often heard this remark, "A large per cent. of cases had them," and there it has ended. But when we note the facts that a large number of individuals present during life marked physical signs of aortic regurgitation, without the ordinary rational signs and in the absence of general discomfort; that many of these cases die from intercurrent diseases and the aortic valve is found to be thoroughly competent at the post-mortem with the exception of the leakage through these holes; that some of our most competent clinical teachers make the broad statement that individuals having well-marked physical signs of aortic regurgitation attain a good old age, when true aortic regurgitation is regarded as the most fatal valvular lesion; that some state that an aortic regurgitation gives the greatest expectation for life, and further that the statement is made that in a large percentage of instances the post-mortem examination does not sustain the diagnosis made during the life of the individual, it seems to me time to attach some importance to this lesion, and to place an interpretation upon our signs and symptoms which will enable us to have our diagnosis confirmed in the deadhouse in almost every instance—it may be asking too much to say in every case, but the error ought to be the exception to the rule and not the frequent result. Since taking this view of the subject and working upon its principles, my diagnosis has generally been confirmed at the autopsy. I have frequently diagnosticated these congenital perforations before the class in this room, and later have had the privilege of showing the same class the heart containing these perforations which they had previously listened to in life. Aortic regurgitation from incomplete closure of the aortic valve can be differentiated from regurgitation due to congenital perforations by observing the following differential points:

Aortic Regurgitation from	
Incomplete Closure.	*Congenital Perforations.*
Physical signs almost the same, except marked cardiac enlargement.	Physical signs almost the same. No uniform enlargement of heart.
Marked subclavian pulsation.	No subclavian pulsation.
Shot or bead-like pulse.	Pulse normal.
Marked dyspnœa.	No dyspnœa.
Cardiac interstitial pneumonia.	No brown induration of lung.
Cough, with bloody sputum.	No cough or sputum.
May have pulmonary hæmorrhage.	No pulmonary hæmorrhage.
Dropsy usually marked.	No dropsy.
Great general discomfort.	No general discomfort.
May be improved by treatment.	Not affected by treatment.

The comparative study of these two classes of murmurs shows conclusively that we must not be governed exclusively by the loudness and intensity of the abnormal sounds in the diagnosis and prognosis, but we must carefully consider all the evidences presented, before coming to a final conclusion. Above all things, never make a diagnosis or prognosis upon a single examination, but insist upon placing the patient upon suitable treatment and several examinations, and then a wonderful degree of accuracy in diagnosis can be obtained.

Hæmic murmurs, so-called, may be produced at the aortic and mitral orifices in very anæmic subjects. They may be of the direct or indirect variety. When due simply to changes in the blood which alter its density and render it more irritating to the poorly nourished valve-orifices through which it passes, they are usually of the direct type. A direct murmur may be produced both at the mitral and aortic orifices in every anæmic case, but, as a rule, they are not, unless the anæmia is very pronounced and of considerable duration. More frequently, however, the anæmic state of the system disturbs the nervous innervation of the heart or impairs the nutrition of its muscular wall, and causes an incomplete closure of the mitral valve and a mitral indirect murmur, as already described in the last lecture. In rare instances the left ventricular wall may become thin and its cavity dilated so as to prevent a complete closure of the aortic valve, and thus establish an aortic regurgitation. The diminished volume of blood in anæmia, however, will generally prevent any dilatation. The hæmic murmurs will be heard and transmitted in the same manner as the murmurs already described as occurring at the mitral and aortic orifices. They are differentiated from the other forms of murmurs by the anæmia, and the disappearance of the murmur with the removal of the anæmic condition.

You may have noticed in following me, that I have made no mention of the valves of the right side of the heart, except in my description of the pathological changes which are developed from a primary mitral incompetency. Neither had I intended to, but finding since my last lecture that much doubt existed in the minds of some as to the amount of value to be attached to the physical exploration of the right side of the heart, I have concluded to make a few remarks upon the subject in question. During a period of more than twelve years of continuous work in the deadhouse, in which time the number of post-mortems witnessed has reached thousands, I only saw one instance in the adult subject in which there was a primary lesion of the valves upon the right side of the heart, and that was a congenital incompetency of the pulmonary valve. During the life of this patient, although examined carefully by most competent observers, the primary lesion was regarded as an aortic insufficiency, with secondary changes at the pulmonary and tricuspid valves. The pulmonary and tricuspid leakage could not be overlooked, on account of the marked jugular pulsation which was synchronous with the systolic action of the ventricles, the general venous engorgement and the cyanotic state of the system. But none of the examiners detected or recognized a tricuspid regurgitant murmur; the chief cause of the murmur at the base was supposed to be due to incomplete closure of the aortic valve, followed by a similar defect at the ventriculo-pulmonary orifice. Neither have I ever heard a tricuspid indirect murmur, even in cases in which a large volume of blood was continually flowing back into the great veins, as is frequently observed when the pulmonary valve becomes incompetent, as described in the circle of pathological events which follow in order the mitral regurgitation described in my first lecture.

I have often heard a murmur over the "triangular præcordial space," described by some authors as the "tricuspid area," but the post-mortem examination in these cases always revealed numerous perforations in the cusps of the aortic and pulmonary valves, which defects, to my mind, most thoroughly explain the cause of the murmur heard during life, for in their absence the murmur is not heard, and the frequency of the perforations found post-mortem helps to explain a possible mistake. There are also anatomical and physiological reasons why tricuspid regurgitation cannot occur and give rise to a murmur, and especially if the pulmonary valve is competent. It is a well-known anatomical fact that the tricuspid valve is not capable of being closed perfectly at any time, and yet mechanical regurgitation does not occur to any extent. This fact is explained by the perfect closure of the pulmonary valve, which is rarely the seat of pathological lesions during adult life, together with the powerful aspiratory force of the respiratory act, which is constantly producing a large vacuum, as it were, in front of the right heart, so that normally the right ventricle is best described as pumping into a vacuum, which tends to suck the blood from the veins and keep up a constant flow of blood from the veins into the right auricle and ventricle. This reduces the possible chance of regurgitation from the right ventricle into the right auricle and veins, while the pulmonary valve is competent to an almost inappreciable minimum. It is far easier to suppose that the right heart will, and can, pump more easily into a vacuum than against the simple zero pressure of the great veins. Taking into consideration this powerful aspiratory force, and the fact that the venous capacity of the system is about three times as great as the total bulk of the blood, and then admitting that considerable tricuspid regurgitation does occur, it is even now hard to comprehend how the regurgitated blood from the auricle could cause disturbance enough in its backward flow to produce a murmur capable of being detected, because the pressure of the right ventricle is low and the resistance to the outflowing blood almost inappreciable. It is not logical to compare tricuspid insufficiency to the mitral lesion, in which the left ventricular pressure is very great, and being favorably influenced by a constantly increasing auricular and pulmonary tension, aided after a short time by that of the right ventricle. If the tricuspid regurgitation is secondary to profound lesions on the left side of the heart, and finally at the pulmonary valve, the murmur, if one is produced at the tricuspid valve, will be masked by murmurs of higher pitch and wider diffusion, which are already developed at the other valves where the mechanical strain is very much greater, and where the reversed or opposing blood-currents will produce more decided disturbances in the mechanism of the heart and its valves. Then, again, if we stop and consider for a moment the direction of the current of blood which is capable of pro-

ducing tricuspid regurgitation, and the laws which govern the production and local point of intensity of the murmurs and their transmission, we find another obstacle to the development of the sound of this murmur where it is commonly said to be found. The axial line for the right auriculo-ventricular orifice corresponds to a line drawn from left to right from before backward, and from below upward; or on an axis transfixing the body from before backward, from left to right, and from below upward, starting in front on the left side at the junction of the fifth costal cartilage with the sternum, passing through the chest, coming out posteriorly at the fourth intercostal space at the posterior axillary line. The tricuspid valve is situated on the line of this axis behind the right border of the sternum, opposite the junction of the fifth costal cartilage and the fourth intercostal space of the right side. The point, therefore, at which the tricuspid murmur could be heard with the greatest intensity would be just beyond the seat of the valve, or over the junction of the fifth costal cartilage and the fourth intercostal space, immediately beyond the right border of the sternum. Following the direction of the current of blood producing the murmur, it ought to be transmitted toward the centre of the right lung. In the transmission of the tricuspid regurgitant murmur, if it ever occurs, we cannot take advantage of the sternum as a medium by which the murmur could be transmitted in an opposite direction to the current of blood which is producing the abnormal sound, as is done in the mitral regurgitation. The reason for this assertion is that, at the time of the systole, the right heart is rolling backward under the cover of the right lung, and away from the sternum, and at the same time the lung on the right side, with each inspiration, is being crowded in between the heart and the anterior chest wall, all of which will tend to prevent the transmission of a tricuspid regurgitant murmur back against the current by which it is produced, and will tend to prevent its ever being heard in the immediate vicinity of or over the sternum. Viewed in this light, and in face of the opposing post-mortem facts, when we come to analyze the evidence candidly there is comparatively no ground for believing that a tricuspid murmur is produced and heard over the sternum. It seems, however, almost a waste of time to discuss at this length a condition which is considered by many of the best observers as out of the question.

At our next lecture, gentlemen, we will consider the treatment of these cardiac affections, the physiological and therapeutic action of the drugs classed as cardiac tonics and stimulants.

MEDICAL PROGRESS.

Remote Effects of Removal of the Uterine Appendages.—In a paper "On the Remote Effects of Removal of the Uterine Appendages," read at the French Surgical Congress, LAWSON TAIT (*Medical Record*, May 2, 1891) repudiated the statement that permanent evil results followed removal of the tubes and ovaries for disease of the uterus or its appendages, or for the relief of nervous disorders. He distinguishes between the sequelæ following removal of the ovaries or of the testicles before the period of puberty and those resulting from removal when the organism has attained maturity. He maintained that the changes immediate and remote which followed removal of the uterine appendages for disease were analogous to those which take place at the menopause. The scientific tenor of the paper is somewhat ruffled by an occasional outburst of virulence against those who differ with Tait.

Hæmocyne (the Serum of Dog's Blood) in the Treatment of Tuberculosis.—HÉRICOURT, LANGLOIS and ST. HILAIRE (*Gaz. Méd. de Paris*, 6, 1881) had made 150 injections of from one to three cubic centimeters (fifteen to forty-five minims) of the serum of dog's blood in the treatment of a number of cases of phthisis. The injections were made in the lumbar region at intervals of two or three days, and were, as a rule, unattended with local or general reaction. Of the four cases reported, two had both pulmonary and laryngeal phthisis. In these two the condition of the larynx improved and the voice became stronger. In all the appetite improved, the cough and expectoration diminished, the night-sweats ceased and the weight increased. The physical signs underwent little change.—*Centralbl. für klin. Medicin*, May 9, 1891.

Tachycardia at the Menopause.—KISCH (*Wiener med. Presse*, May 10, 1891) has observed twenty-eight cases of tachycardia in women at the climacteric period. At the time of the menopause, rarely after complete cessation of menstruation, such women suffer occasional attacks of palpitation, often on slight or no provocation. There may be, besides, a sense of anxiety and oppression, arterial pulsation, fulness of the head, flushing, headache, mist before the eyes, ringing in the ears, vertigo, and possibly loss of consciousness. The pulse is 120, 150 or more, strong, full, and regular. Tracings show a large wave, with a sudden, rapid ascent and a similarly sudden and abrupt descent, almost reaching the base line before the occurrence of the secondary elevation, which is increased. The heart-sounds are clear and voluminous. Fugacious redness of the face, neck, and chest sometimes appears, attended with a sense of burning. The paroxysms may occur several times daily or at intervals of a number of days, and last from several minutes to a quarter of an hour. There is usually a condition of bodily and mental restlessness. In the majority of cases observed by Kisch there were evidences of plethora; the blood was found to contain an excess of hæmoglobin. There was neither marked dyspnœa nor cardiac asthma; manifestations of stasis were rare; œdema of the lower extremities was exceptional; the urine contained no albumin. The patients felt an unwarranted fear of apoplexy. The disorder may last from a few weeks to two years or more. It was attended with no injurious sequelæ. Systematic, gentle purgation, associated with suitable dietetic regulations, exercised a beneficial influence. Mountain air, a bland diet, active exercise, and cold affusions were useful. Bromides, in small doses, may be used for their sedative effect. Kisch ascribes the etiology to the changes in the ovaries at the climacteric period: hyperplasia of the stroma at the expense of the parenchyma, with retrograde metamorphosis of ovisacs, giving rise to

nervous irritation. An analogous explanation has been given to the tachycardia observed in hysterical patients and in women from whom the ovaries have been removed during the period of maturity—the changes resulting from consecutive atrophy causing irritation of nerve fibres.

The Source and Function of Pus Corpuscles.—Before the Academy of Sciences, RANVIER (*La Médecine Moderne*, May 7, 1891) expressed the view that the phenomenon of diapedesis is not sufficient to explain the rapid formation of large quantities of pus. Twenty-four hours after injection of a solution of nitrate of silver (3 : 1000) into the peritoneal cavity of a mammiferous animal, the so-called clasmatocytes have almost entirely disappeared, being replaced by a large number of leucocytes. Intermediate forms between these two may be observed. The irritation has induced in the clasmatocytes a return to the embryonal state; they are transformed into leucocytes, which multiply by division. Of two rats, into the peritoneal cavity of each of which six drops of a solution of nitrate of silver (3 : 1000) were injected, in one, at the end of twenty-four hours, the cavity contained a large quantity of purulent fluid; in the other, at the end of three days, no pus had formed. In the first instance, the pus corpuscles contained débris of varied character, red cells, fat granules, grains of albuminate of silver, cellular fragments, etc. The interpretation is that the injection caused the necrosis of a considerable number of cellular elements, the products of the destruction of which it is the function of the pus cells to remove, in order that the processes of repair may be carried on.

Microcidin—a New Antiseptic.—POLAILLON (*La Médecine Moderne*, April 30, 1891) presented to the Academy of Sciences the results of an experimental and clinical study of the product obtained by heating β-naphthol to liquefaction and adding half as much soda. To the white powder which results Berlioz has given the name of microcidin. While possessing feeble toxic qualities, the product is said to be a good antiseptic, easily soluble in water, and without odor or taste. While its antiseptic power is lower than that of bichloride of mercury and of naphthol, it is ten times that of carbolic acid and twenty-eight times that of boric acid. It is less toxic than naphthol. It is soluble in water, in the proportion of one to three. The remedy is not caustic, in the proportions in which it is to be employed; it is not irritating to wounds; it does not corrode instruments or destroy linen. It lowers normal and febrile temperature in animals, and is eliminated by the urine, upon which it confers the property of not decomposing. It may be used in proportions of 3 or 5 to 1000 parts of water.

Terebene, Terpine and Terpinol.—Terebene is isomeric with the essence of turpentine and is obtained by the action of sulphuric acid upon turpentine with distillation. As an antiseptic and disinfectant it is agreeable in odor and vaporized acts as a sedative and antiseptic in phthisis. Internally it is employed in capsules for the purpose of producing intestinal antisepsis and for the cure of dysentery. It is also sedative and antiseptic to the walls of the bladder when eliminated by the urine. It may be administered by inhalation in the steam of boiling water, or by the stomach in the form of tablets as follows:

℞.—Terebene	. . . .	4 drachms.
Powdered gum arabic	. .	4 "
Water	. . . . .	2 ounces.
Pulverized sugar	. . .	6 "
Powdered gum tragacanth	.	2 drachms.

Make into 100 tablets and administer one every four hours.

℞.—Terebene	. . . .	4 drachms.
Pulverized gum arabic	. .	4 "
Water	. . . . .	2 ounces.
Syrup of ginger	. . .	1 ounce.

Divide into 100 capsules.

Terpine is the hydrated essence of crystalline turpentine. It is obtained by bringing together four parts of essence of turpentine, three parts of alcohol and one part of nitric acid. After several weeks it forms in beautiful crystals. Terpine may be transformed in the presence of sulphuric acid into an oily body, terpinol. The therapeutical actions of terpine and terpinol are precisely those of the balsams, and these are, therefore, particularly useful in the treatment of catarrhal affections of the respiratory tract.

LEPINE has employed terpine as a substitute for turpentine, as an expectorant and diuretic, giving it in doses of from three to six grains. The influence of terpinol in cases of chronic bronchitis with profuse expectoration is very useful but the odor is somewhat disagreeable. Terpine may be given in the following manner:

℞.—Terpine	. . . .	30 grains.
Glycerin	. . . .	2 ounces.
Alcohol	. . . .	2 "

Two teaspoonfuls each day.

Or it may be made into pills of which from four to five are given every twenty-four hours; or it may be placed in capsules in the dose of one to two grains. Terpinol may be given in capsules in the following manner:

℞.—Terpinol	. . . .	15 grains.
Benzoate of sodium	. .	15 "
Sugar, a sufficient quantity.		

—*Journal de Médecine de Paris.*

A Case of Poisoning by Aconitine.—In *La Médecine Moderne* a case is reported of a girl, aged twenty years, who had suffered from a violent attack of toothache, to relieve which aconitine in powder form was given. Immediately after its administration the patient was seized with violent colicky pains and in the course of a few hours died.

At the autopsy it was decided that the death was due to the aconitine, and after the testimony of Brouardel that the doses of the various aconitines is not known with certainty, the physician who prescribed the remedy was fined 100 francs. It was also pointed out that it is dangerous to prescribe aconitine without specifying the variety of aconitine which the physician wishes the druggist to dispense.

The Prophylaxis of Ophthalmia Neonatorum.—DEHENNE (*Journal de Médecine de Paris*, March 15, 1891) states that of one hundred blind persons forty-five have lost sight as a result of ophthalmia neonatorum. The gravity of this affection has been amply demonstrated. In hospitals in which rigorous antiseptic precautions are observed, before and during labor, ophthalmia of the newborn does not arise. Every purulent ophthalmia, carefully treated, ought to be cured. As a prophylactic measure, the eyes of the newborn infant should be washed with a 1:2000 solution of bichloride of mercury, or one drop of a 1:200 solution of nitrate of silver should be instilled into the eyes. If the lids are swollen, absorbent cotton saturated with ice-water should be applied. The cold can be maintained by placing bits of ice upon the cotton. The applications should be discontinued as soon as the swelling has disappeared. The lids should be washed about every hour with a 1:1000 solution of bichloride of mercury. Morning and evening, four or five drops of a solution of 1 part of neutral sulphate of eserine in 200 of distilled water should be instilled into each eye. Once a day the conjunctival surface of the lid should be gently brushed with a solution of nitrate of silver, 1:50. It is useless to apply stronger solutions. The solid stick must not be used, because it produces an eschar which, desquamating, opens the portals for the entrance of streptococci and gonococci.

Exstrophy of the Bladder and Epispadias.—BERGER (*L'Union Médicale*, April 30, 1891) presented to the Academy of Medicine an old man with exstrophy of the bladder and epispadias, in the case of whom, autoplasty failing, a strip of tissue was brought down from the abdominal wall to the opening in the urethra, the margins of which had been freshened. A large area of tissue was removed from the scrotum and applied to the exposed portion of the bladder. After two minor supplementary operations, the result was successful.

Congenital Hypertrophy of the Hand.—RICHARDIÈRE (*L'Union Médicale*, April 23, 1891) presented to the French Society of Dermatology and Syphilography a case of so-called pseudo-hypertrophy of the hand and fingers, the increase in size being due to an excessive development of the subcutaneous connective and adipose tissues. In true hypertrophy, the soft parts, the tendons, and the bones are all increased in size. In the false variety, the condition is perhaps one of diffuse lipomatosis.

Treatment of Nocturnal Incontinence of Urine in Children.—OLLIVIER (*L'Union Médicale*, April 21, 1891) recommends the introduction into the bladder of a small insulated sound tipped with a metallic button and connected with one pole of a battery, the other being applied to the pubes or the perineum. Weak currents are at first used. Twelve to fifteen applications are usually necessary to obtain a curative result. This treatment failing, belladonna or strychnine should be administered.

Treatment of Tuberculous Endometritis.—JOUIN recommends dilatation of the cavity of the uterus by means of a laminaria tent which has been placed for at least twelve hours in iodoform-ether, and, at intervals of several days, packing the uterus with iodoform gauze. Internally, creasote is administered. Sexual intercourse is interdicted until recovery is complete.—*L'Union Méd.*, April 28, 1891.

For Hay Asthma.—

℞.—Cocainæ hydrochlor. . . 1½ drachms.
Glycerini . . . . 3 fl. drachms.
Aquæ destil. . . . 5 "

Sig.—At the onset of the attack make two applications, with an interval of five minutes, by means of a brush, to the accessible nasal mucous membrane.

℞.—Cocainæ hydrochlor. . . ½ drachm.
Benzoini, pulv. . . . 1½ drachms.
Sacchari, pulv. . . . ½ drachm.

Sig.—Use as a snuff.
—*L'Union Méd.*, April 18, 1891.

For Herpes Genitalia.—(BESNIER.)

℞.—Acidi tannici . . ½ drachm.
Bismuthi subnitratis . 6 grains.
Pulvis amyli . . 12 drachms.

Sig.—Dust locally the region the seat of the herpes, after washing with dilute carbolized water. If ulceration exists, astringent dressings should be used. If the skin is dry, inunctions of vaseline should be used.—*L'Union Méd.*, April 25, 1891.

Cyanide of Gold.—Cyanide of gold is a yellowish, crystalline powder, without taste, insoluble in water, alcohol and ether. It has been given for the cure of scrofula, phthisis and amenorrhœa, in the following formula, by OESTERLEN. The dose is from $\frac{1}{60}$ to $\frac{1}{10}$ of a grain.

℞.—Cyanide of gold . . . 2 grains.
Chocolate . . . . 1½ ounces.

Make into twenty-five powders, and give from two to four each day.—*La Médecine Moderne.*

Treatment of Coryza.—

℞.—Salicylate of sodium } of each . ½ ounce.
Syrup of orange }
Peppermint water . . . 4 ounces.

At the onset of the attack a teaspoonful to a dessertspoonful should be given every three or four hours.—*Journ. de Méd. de Paris.*

Pilocarpine in Œdema of the Glottis.—MENDOZA (*La Semaine Médicale*, May 6, 1891) reported to the French Society of Otology and Laryngology the case of a young man with œdema of the glottis, in which two colleagues advised surgical interference. Detecting with the laryngoscope a small aperture in the midst of the swollen structures, Mendoza proposed the subcutaneous administration of pilocarpine. Accordingly, somewhat more than a third of a grain of the alkaloid was given in three doses, in the course of twenty minutes, with the happiest result. In the course of a week the patient had completely recovered.

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SATURDAY, MAY 30, 1891.

AN EDITORIAL CHANGE.

WITH the issue of THE MEDICAL NEWS for June 6th, the editorial management will pass into the hands of Dr. George M. Gould, of Philadelphia. In succeeding to the editorial chair Dr. Gould brings not merely a well-won reputation for both literary and medical training, but also an experience which amply guarantees that THE NEWS will well maintain its character as a periodical devoted to the highest interest of practical medicine.

The retiring editor desires to thank those who have contributed to the columns of THE MEDICAL NEWS, not only for their valuable articles, but also for the kindly courtesy which they have invariably shown him—a courtesy which he is confident will be extended to his successor.

THE UNIVERSITY OF PENNSYLVANIA AND HIGHER MEDICAL EDUCATION.

ON May 21st Dr. Pepper submitted to the Board of Trustees and the Medical Faculty of the University of Pennsylvania a proposition to subscribe on his part the sum of $50,000 toward a permanent endowment fund of $250,000, and also for five years the sum of $1000 annually toward a guarantee fund of $20,000 per annum. These propositions were conditioned upon the completion of the subscription to the endowment and guarantee funds before January 1, 1893, and upon other minor matters of detail, but principally upon the decision and announcement of the University before June 1, 1891, that a four-year obligatory course of medical study should be established on or before September 1, 1893.

There can be but one opinion concerning this generous and vigorous action of Dr. Pepper. The movement deserves the most unqualified support of all, and it is to be hoped that the necessary amounts may be subscribed in a short time. We understand it was reported at the meeting that the Medical Faculty had contributed about $10,000 of the entire guarantee fund, and that the conditions would in time be fulfilled.

The principal object aimed at—the four-year obligatory graded course—is one that deserves the sympathy of all. It has of late become more and more evident that two, and even three, years of preliminary study are insufficient to worthily and adequately equip young men for the best work in the medical profession. The multiplication of post-graduate courses of study, the efforts to raise the standard of admission, the painful unfitness of many graduates for the duties of their work, have served to bring the want more plainly before the mind. Why not do the preparatory work before, rather than after, graduation? Experience and learning are far more readily acquired under the eye of trained teachers than when the physician is placed in charge of those whose lives depend on his ability to deal with disease.

The generosity of Dr. Pepper and his associates will again advance the University in her proud office of leader in scientific and progressive medicine in the United States. It is in this spirit that men work who are conscious of the high import of the interests confided to their care and of the profound rôle scientific medicine has to play in modern life.

There is the greatest difference between being driven by an aroused public sentiment, or drawn by a shrewd self-interest, into taking a hazardous stride forward, and this other way of bravely placing the standard in advance, and with determination bracing oneself to a purpose of realization of one's own ideal whilst calling upon the laggard world to "come up higher." Provost Pepper and his fellow-workers have chosen the latter plan, and our profession has the best reason to congratulate itself and to pray for its speedy realization. But such

an actualization depends upon each of us—in part, even upon the humblest—and everyone should take to himself the admonition to give—if not money, what is often of greater value—his word of encouragement and his lift of helpfulness. Toward this end THE MEDICAL NEWS would most heartily signify its good-will by calling the attention of its many readers to this proof of noble enthusiasm, and by asking everyone to contribute his mite, each in his chosen way.

REVIEWS.

MEDICAL JURISPRUDENCE AND TOXICOLOGY. By JOHN J. REESE, M.D. Third edition. Philadelphia: P. Blakiston & Son, 1891.

WE are glad to find that Dr. Reese has seen fit to enlarge and add to the already valuable material in this work the latest decisions and advances in medico-legal matters. The interest of the public at large, as well as of physicians, in medical expert testimony has been stirred to its depths lately by the numerous criminal trials in which prominent practitioners have been engaged. Unfortunately in many of our medical schools this important subject is too often given a very secondary position in the curriculum, so that such a standard text-book as the volume in question is an absolute necessity to the physician. The author explains thoroughly, in the opening chapters, the duties of the physician in medico-legal cases. He describes the observations he should make, the proper method of arranging and preserving such information, and to what, and how, a physician should testify in court. He points out the difference between the position occupied by the physician who is a witness merely as to facts, and his who is called to give expert testimony. Of the two, very different questions are to be asked, and Dr. Reese denounces the methods of cross-examination now so much in vogue.

Then follow chapters upon the signs of death and the detection of the immediate cause, and directions to be followed in making a post-mortem. Chapters on poisoning, feigned disease, pregnancy, criminal abortion, rape, insanity, and malpractice bring the book to a conclusion.

TRANSACTIONS OF THE AMERICAN GYNECOLOGICAL SOCIETY FOR 1890. Edited by HENRY C. COE, M.D. Philadelphia: Wm. J. Dornan, 1891.

THE volume before us contains the minutes and papers read at the fifteenth annual meeting of the Society, which was held at Buffalo, N. Y., in September last. A careful perusal of the many papers read, with the accompanying discussions, cannot fail to be of interest to all physicians, whether they be gynecologists or not. The elaborate research exhibited in the paper upon "Subpericranial Blood-tumor of the Newborn," by Dr. H. A. Kelly, is instructive in the highest degree. Dr. J. M. Baldy makes a most welcome contribution to our knowledge of the "Diagnosis and Treatment of Early Ectopic Gestation," in a paper which places clearly before one the various symptoms of extra-uterine pregnancy, and urges forcibly the necessity of prompt operative interference. Other papers are contributed by such well-known authorities as Drs. Skeene, Coe, H. T. Byford, Jenks, and Reynolds.

SOCIETY PROCEEDINGS.

THE AMERICAN MEDICAL ASSOCIATION.

Forty-second Annual Meeting, held at Washington, D. C., May 5, 6, 7, 8, 1891.

[Continued from page 592]

THIRD DAY.—SECTION OF GYNECOLOGY AND OBSTETRICS.

The important subject of the "Comparative Merits of the Electrical and Surgical Treatment in Cases of Uterine Myomata" formed the topic for discussion in the Section of Obstetrics and Gynecology on Thursday morning, May 7th.

DR. MASSEY, of Philadelphia, opened the discussion with a paper narrating his results in the treatment of thirty-nine cases by electricity. His methods were those employed by Apostoli, with the exception that he seldom made deep punctures, but confined the insertion of his needle to a distance of about one-third of an inch. He reported five cases as cured, twenty-three cases of smaller tumors lessened in size, eight cases in which symptoms were relieved, two cases in which nothing was accomplished, and one case made worse by the treatment. His percentage of cures was 12.8; about three-fourths of the cases had their symptoms relieved; and in the two cases in which he failed to produce any effect, the tumors were inaccessible without danger to the patient. The case in which the failure of electrical treatment was followed by which injury was done was that of a fibro-cystic tumor, in an attempt to remove the tumor piecemeal, which ended in septic infection and death. His method of making punctures is that known as buried punctures, the needle being insulated with rubber to a point one inch from its extremity. The tissues, after such puncture, healed rapidly and without reaction. He exhibited electrodes tipped with platinum, some of them elastic and coated with shellac, which allowed disinfection with the alcohol lamp; he also presented a current-controller. It is his custom to allow five or seven days to elapse between intra-uterine applications. He had found benefit also from vagino-abdominal applications. In conclusion, he urged that a better knowledge of the successes of surgical operation in these cases is demanded before a fair comparison can be made between surgical and electrical treatment.

As a criticism upon the claims made by electricians, DR. WERNER, of Philadelphia, read a statistical paper, claiming a superiority for surgical over electrical treatment, and narrated the case of a patient having a multinodular tumor from whom she removed the ovaries to check hæmorrhage; this persisting, however, owing to the presence of submucous growths, these were removed, when the hæmorrhage ceased.

Electricity was also championed by DR. MARTIN, of Chicago, who confined himself to assertions based upon

an experience with two hundred and fifty cases, from which he claimed that 75 per cent. of fibroid tumors of the uterus can be cured or improved by electricity, while 25 per cent. demanded operations. He had found that surgical treatment was necessary in cases in which he could not insert an electrode within the uterus without danger to the patient. (Dr. Martin was upon the programme for a paper upon electrical treatment, but made brief remarks instead.)

Another advocate of electricity, Dr. Bigelow, of Philadelphia, failed to put in an appearance, hence that side of the argument was represented largely by Dr. Massey. The surgical aspect of the question was opened by DR. EASTMAN, of Indianapolis, who described and illustrated his method of performing supra-pubic hysterectomy. After abdominal section he compresses the uterus and tumor by an elastic bandage secured by large pins put through the capsule; the uterus is then opened and the tumor enucleated. A large staff, devised by him, being passed from below to serve as a guide, the peritoneum is then stitched over the stump, the actual cautery having been used to sear the interior of the uterus to prevent its contents from escaping into the peritoneal cavity. He had performed these operations successfully in nineteen cases, and had met three cases in which the relations of the tissues were such that no pedicle could be formed. In his method of performing vaginal extirpation of the uterus, Dr. Eastman places the patient in Sims's position, securing the uterine arteries by a ligature passed with a large curved needle. He prefers the ligature to the application of compressing forceps, and brings the stumps of the broad ligaments, as far as possible, outside the peritoneum. He also exhibited vulsella forceps of large size, devised by him for grasping large tumors.

Three hysterectomies were reported by DR. OPIE, of Baltimore. Clamps were used to secure the pedicle. Two of the cases recovered and one, having a fibro-cystic tumor, died. Dr. Opie had given electricity a faithful trial for several years, but had observed no other result than an occasional cessation of hæmorrhage and an improvement in general health. He advised operation in all cases in which fluctuation is present.

DR. JOSEPH PRICE, of Philadephila, read a paper giving the details of fifty-three cases of hysterectomy, with three deaths. This paper will soon appear in full in THE MEDICAL NEWS.

DR. FLORIAN KRUG, of New York, did not believe that large fibroids could be successfully treated by electricity. He believed the best operative procedure to be total extirpation of the uterus and tumor, leaving no stump. He had found Trendelenburg's posture an aid in all abdominal operations; in feeble patients it did much to prevent anæmia of the brain. He requires for such operations only scissors, scalpel, aneurism-needle with ligature-needle, and ligature ordinarily employed. The finger of an assistant takes the place of the staff employed by Dr. Eastman; he often performed operations in thirty minutes—a difficult case requiring an hour. The ligatures and iodoform gauze used as dressing are brought out through the vagina. The gauze is left in for a week without danger; the bowels are moved on the day following operation. Dr. Krug considers the ligature much better than the clamp for checking bleeding.

From the standpoint of surgery, DR. BALDY argued that most cases of uterine fibroids need no treatment. Several agencies will relieve pain caused by such tumors, among these being various drugs and electricity. When a patient will not consent to a radical cure by operation, he advises palliative treatment, and in operating he much prefers the extra-peritoneal method of treating stumps.

An interesting case, showing an unusual result of electrical treatment, was narrated by DR. FRY, of Washington. After the use of the galvanic current, the current strength ranging from 85 to 200 milliampères, severe uterine contractions caused the expulsion of a piece of the tumor, eight inches in length; this was followed by septic infection.

The question under discussion was ably summarized by DR. SKENE, of Brooklyn, who pointed out the fact that the remedy should be chosen with reference to each individual case, whether that remedy be electricity or surgical operation. What is most needed is careful study in diagnosis, that proper discrimination may be exercised in the choice of remedies for different cases. We have not yet sufficient information to decide positively as to the comparative merits of the two agents; electricity will control many cases, especially if applied early, and operation can thus be avoided. The dangers attending the use of electricity are constantly becoming less; punctures can probably be avoided, thus eliminating one of the greatest sources of danger. It is a very significant fact that at present the death-rate from surgical operation in these cases is higher than the death-rate of cases which are not treated at all.

The most interesting contributions of the afternoon session on May 7th were the papers of Dr. Polk, of New York, describing "Operations for the Preservation of the Uterine Appendages;" an interesting paper by Dr. Skene on the "Treatment of Chronic Ovaritis;" and a study by Dr. J. W. Williams, of Baltimore, upon the "Structure of the Fallopian Tube." For the full text of Dr. Skene's paper the reader is referred to a later issue of THE MEDICAL NEWS.

DR. POLK reported forty-nine cases of disease involving the uterine appendages in which an effort was made to avoid their removal. In the majority of these cases the operations resulted in benefit. In fourteen cases in which the tubes were very adherent, the adhesions were broken up much to the patients' advantage. In three cases, after abdominal section, an exploratory incision into the ovary was made, and the patient subsequently improved in health. In four cases in which the ovaries were found very highly congested and displaced, they were suspended by sutures in their proper positions, and the congestion was relieved. In five cases small cysts in the ovaries were incised and emptied; an improvement in the patient's health followed. Four cases of resection of the tubes were described. Dr. Polk believes that if the ovary is sound and the tube is affected, it is advisable to resect the diseased portion of the tube, stitching the extremity in the vicinity of the ovary. In two such cases pregnancy and labor had occurred after the operation, and a good result had been obtained.

The paper of DR. WILLIAMS was illustrated by drawings of the microscopic anatomy of the tubes, demonstrating that the mucous lining contains but one layer of epithelial cells arranged in longitudinal folds. Three layers of muscular tissue exist, and at some points in the tube diverticula are found in which an ovum may lodge, favoring the development of ectopic gestation. Dr. Williams also showed that during fœtal life the tubes are twisted upon themselves, and that this condition in adult life may account for sterility and favor pyosalpinx.

As an interesting contribution to our knowledge of ectopic gestation, DR. FORMAD, of Philadelphia, exhibited photographs, and stated the result of 3500 post-mortem examinations, in which he had found thirty-five cases of ectopic pregnancy. The women were multiparæ, between twenty and forty years of age; were conscious that they were pregnant; and in all cases chronic inflammation of the tubes was present. Thirty-one of the cases showed ruptured ectopic gestation-cysts in the abdominal cavity; three were cases of interstitial pregnancy, and one was ovarian. In every case, severe mental or physical disturbance was followed by shock, pain, and bleeding; the amount of blood found in the abdomen varied from a pint to two gallons. All of the women were in early pregnancy between the first and third month. Dr. Formad considers ruptured ectopic gestation to be the only cause of hæmatocele.

In the discussion of these papers, it was agreed that the diagnosis of chronic ovaritis is practically impossible, except by microscopic examination. A tube in which purulent inflammation exists can never be useful, and should be removed; operation, however, should be followed by thorough constitutional treatment, especially addressed to the nervous system. Pain after operation is sometimes relieved by hot douches and the use of electricity. The drift of general opinion was decidedly against the removal of the tubes and ovaries for neuroses only.

"Minor Gynecology" was the subject of a paper by DR. BALDY, of Philadelphia, in which it was shown that the modern pathology of pelvic disease rendered irrational many minor operations formerly often performed.

The merits of the vaginal tampon were discussed by DR. SELLMAN, of Baltimore. Many uses of the tampon the speaker discouraged as useless and harmful, especially urging that the duty of the physician is to remove the cause of hæmorrhage rather than to seek to dam up the blood in the uterus by a tampon. Tampons interfere with the functions of the bladder and rectum, and sometimes result in forcing secretions backward through the tubes into the peritoneal cavity. They are useful to limit an agent applied to the interior of the uterus from coming in contact with the external parts; they are useful also in cases of scanty secretion; they are unreliable in the treatment of displacements, although the three tampons suggested by Mundé are sometimes very effective.

In the discussion upon minor gynecology, Dr. Sutton, of Pittsburg, believed in operating upon lacerated cervices when they cause suffering, and when there is no disease of the appendages. He believed that a lacerated cervix predisposes to cancer; he favored also the use of the dull curette, and had seen nothing but benefit from the use of iodoform gauze as a tampon, which could remain from seven to ten days with safety.

The only paper bearing directly upon obstetric practice was one read by Dr. BERNARDY, of Philadelphia, in which he described his experience in the treatment of posterior positions in face presentations. The danger of impaction was demonstrated and explained, and the treatment suggested was version when the chin was still as high as the brim of the pelvis, or craniotomy as soon as impaction occurred.

In the closing session on Friday morning, May 8th, DR. HUMISTON, of Cleveland, read a paper upon "The Use of Cocaine in Gynecology." He first administers a half ounce of whiskey to his patients, and then injects the site of operation with from fifteen to forty minims of a 4 per cent. solution. He had recently performed an extensive plastic operation, lasting an hour, with the use of three grains of cocaine. His operations are done under strictly aseptic precautions. Union by first intention was the rule. In the discussion of this paper the prevalent opinion was adverse to the claims of cocaine as a reliable anæsthetic, there being danger of constitutional poisoning, interference with union by first intention, and failure to control the pain.

A paper of value, describing studies in the infection of drainage-tubes carried on at the Johns Hopkins Hospital, was read by DR. ROBB. Sixteen cases were studied by inoculation of culture materials with fluid obtained from drainage-tubes. In nine cases no infection resulted; in six cases bacteria of but feeble power were found, while in one case septic infection and the formation of pus occurred. The principle of treatment advised consists in carefully guarding the orifice of the drainage-tube and excluding every source of external contagion. The tube is emptied, not by a syringe, but by bits of baked cotton handled by a slender sterilized forceps.

A simple and remarkably efficient tube devised for drainage was shown by DR. R. T. MORRIS, of New York. It consisted of a narrow strip of gauze covered by a band of protective material, in which many holes had been cut, and rolled to form a long wicking. When it is necessary to inject antiseptic fluids through the drainage-tube, a soft rubber tube is placed in the centre, and the other is rolled about it. Both varieties of tube were not likely to leave fistulæ, and had been found very efficient.

The remainder of the morning was occupied by papers upon "Peritonitis after Operation," by DR. SHIMWELL, of Philadelphia, and by DR. C. R. READ, of Ohio, upon "The Palliative Treatment of Cancer of the Uterus."

A general discussion upon the question of Antisepsis *versus* Cleanliness, showed that operators relied upon both, recognizing fully the importance of such studies as those of Dr. Robb.

The opinion was also expressed that operations of magnitude should be confined to specialists, and not entrusted to incompetent practitioners.

As a matter of business, it was said that seventy papers had been presented to the Chairman and Secretary of the Section, of which twenty had been excluded as manifestly unfit to be read; a resolution was therefore offered by Dr. Opie, that in future papers be limited to forty, and that the Chairman be empowered to make

such selection of papers as he deemed most advantageous for the Section. The Chairman was congratulated upon the programme which he had offered to the Section, and, in return, thanked its members for the courtesy and kind assistance which they had shown him; after which the Section adjourned.

NEW YORK ACADEMY OF MEDICINE.

Stated Meeting, May 7, 1891.

ALFRED L. LOOMIS, M.D., IN THE CHAIR.

OBSERVATIONS ON THE USE OF KOCH'S TUBERCULIN IN THE TREATMENT OF PULMONARY TUBERCULOSIS.

THE discussion was opened by Dr. Francis P. Kinnicutt with a report of his observations at St. Luke's Hospital. Forty-two patients were under his personal supervision in connection with this treatment, 13 of which were cases of pulmonary tuberculosis; in 6 of these there was tuberculosis of the larynx, of greater or less severity. The only point in the technique to which he specially called attention was the necessity of employing fresh solutions of Koch's fluid, as experience had shown that the carbolic acid solutions deteriorated by keeping. The initial dose for adults did not exceed one milligramme; at first the severity and duration of the general and local reaction was taken as the guide to the frequency of the re-inoculations, but later on it was found better to await the subsidence of the physical reactions and to study more closely the idiosyncrasies which presented themselves. Gradual destruction, separation and elimination, or encapsulation were the steps of Nature's process of repair, and it was reasonable to expect that imitation of this process would give the best results.

Dr. Kinnicutt divided his cases into three groups, viz.: (1) those showing a notable improvement in the pulmonary and general condition; (2) those showing no improvement, or improvement in certain respects only; (3) those cases in which there was either a distinct deterioration in the patient's condition, or in which the progress of the disease continued unchecked. The first group consisted of five cases. In one of these, the daily quantity of sputum was only half an ounce; a careful examination by Dr. Prudden failed to detect the bacilli *before* the inoculations were begun, but during the treatment they were found. In all the cases, the bacilli gradually diminished in number and finally disappeared. The examinations of the sputa were made by Dr. T. M. Prudden, who mixed the whole quantity for the twenty-four hours with a saturated solution of borax, and allowed it to stand for twenty-four hours, with occasional vigorous shakings. One cubic centimetre was taken as the unit of measure. In the records of the number of bacilli found in the various cases, it should be remembered that a very large number of bacilli to one cubic centimetre does not mean very many to a cover-glass; thus: 400,000 bacilli to one cubic centimetre represents only 80 bacilli under a cover-glass, or in forty fields, and 500 bacilli in one cubic centimetre represents only one bacillus under a cover-glass. Three of the five cases were discharged after eleven, thirteen, and sixteen weeks of treatment respectively. Two of them had gained four pounds, and one eleven pounds, the sputa and cough being practically absent, and the temperature normal. The two remaining cases are still under treatment in the hospital. None of these cases had hæmoptysis, although two had had copious hæmorrhages just before admission. The diminution in the degree of dulness, and a more nearly normal character of the respiratory murmur may result from the disappearance of the intra-alveolar exudation, and not from destruction of the intra-alveolar tubercular tissue—the two prominent factors in pulmonary tuberculosis. The improvement in these five cases was more marked than in the other cases. These patients received cod-liver oil and creasote, or both, during the greater part of the treatment, but this medication had been used previously to the inoculations without benefit, one of the cases having been under this treatment for a year.

The second group comprised four cases. One of these for many weeks showed the least constitutional tolerance to the fluid inoculations which were usually accompanied by much constitutional disturbance. After the first two weeks, the cough was markedly diminished and the sputum was reduced from two ounces to one or two drachms in the twenty-four hours, and the bacilli from 650 to 120 in a cover-glass, or forty fields. The afternoon rise of temperature was much smaller, and the patient gained in flesh, but the physical signs in the lungs and in the larynx remained unchanged. When the report was made, the disease in the larynx had made notable progress, the sputum and bacilli were increased, the patient was losing weight, and his fever had returned.

In the third group of four cases, one of cardiac and renal disease, with infiltration at one apex, is interesting. Reaction followed the second inoculation of two milligrammes, but the albumin in the urine was at once increased, and red blood-corpuscles and hyaline and granular casts appeared in the urine. After the fourth inoculation of two and one-half milligrammes there was headache and obstinate vomiting, with the physical signs of pleuro-pericarditis. After stopping the inoculations, the symptoms and signs gradually declined to the point found on admission. In a second case in which there was infiltration at both apices, and also infiltration of the inter-arytenoid commissure, the first injection of one-half a milligramme caused general reaction and slight epistaxis, and after the second, of two milligrammes, there was slight tenderness and pain in the right iliac region. On Feb. 8th, an injection of four milligrammes produced all the signs of an appendicitis. Under the free use of morphine and poultices the symptoms gradually abated. Within the past few days, there had been a slight recurrence of the appendicitis. The pulmonary signs remained almost unchanged. In a third case in this group, the physical signs on admission pointed to slight infiltration at the left apex, and the existence of laryngeal disease was doubtful. There was a slight evening rise of temperature for the three days preceding the inoculations that the patient was under observation; bacilli were present. Reaction followed injection of one milligramme, and there was abundant moist crepitation over the first and second interspaces and inter-clavicular region, and distinctly diminished resonance over the same areas. Similar phenomena were noticed in many other cases, and were thought to be due to a transitory local hyperæmia, though in the case in question these

signs did not disappear, but rubbing and creaking sounds were heard, indicating the involvement of the pleura, and there was also a small area of fine moist crepitation over the scapular region of the opposite side. In view of this, and the patient's low vitality, no inoculations were given after the maximum dose of two milligrammes had been reached. Subsequently there were signs of two small cavities in the inter-clavicular region. Either a massive catarrhal or caseous hepatization, Dr. Kinnicutt thought, followed the inoculations, and it was the only case in his series in which such lesions occurred.

After a five months' experience with tuberculin, Dr. Kinnicutt concludes that the diagnostic value of this remedy is only relative, that small doses at long intervals should be advised, and that the beneficial effects are restricted to pulmonary disease in its early stages. Local reactions may be developed in the entire absence of constitutional effects as indicated by the temperature. Tuberculin is apparently capable of exciting pneumonic processes of varying degrees of intensity. He was of the opinion that tuberculin is capable in the early stages of pulmonary tuberculosis of effecting greater improvement in the physical condition than has been observed under any other method of purely medical treatment, but he thought its best effects would only be found when it is used in conjunction with the other methods of treatment.

The discussion was continued by the President, Dr. A. L. Loomis, with a summary of the results obtained by him at Bellevue Hospital. Thirteen cases of pulmonary tuberculosis were treated by this method, eight being in the stage of consolidation, two in the stage of consolidation with softening, and three in the stage of softening with excavation. The average dose was 1.9 milligrammes, and the largest number of injections was seventy-seven. The condition of every one of these patients was improved, and the average gain in weight was eight and one-half pounds. In every case the first injection was followed by evidences of increased activity of the process in the lungs, but at the end of the third week the affected areas would usually present an arrest of the disease. In the third class, the average duration of the treatment was eleven weeks, the average dose 0.7 milligramme, and the average gain in weight nine pounds. In all of these cases, the pathological process became much more active, and in one there was an extension of the disease. His experience had taught him that tuberculin was an agent which was capable of exciting active changes in the tubercular areas, the nature and extent of which depended upon the dose and the frequency of the injections. He knew of no method which so effectually maintained the nutritive processes in these patients as the treatment with the pneumatic cabinet, as advocated by Dr. Quimby. The number of bacilli diminished but never disappeared, yet this was not important, as he had known cases which had been cured by the climatic treatment for many years to have bacilli in their sputa, although they appeared to be in perfect health.

DR. H. N. HEINEMAN reported the results of his observations on twenty-two cases of pulmonary phthisis at Mt. Sinai Hospital. In one case of chronic fibroid phthisis, after the treatment had been discontinued for several weeks, the patient had for the first time a pulmonary hæmorrhage, and in two other cases hæmorrhages were brought on by small injections of tuberculin. In another case, having cavities and a tuberculous testicle, the tuberculous process in the testicle became so active that it was necessary to remove the organ in four weeks, when it was found to be the seat of extensive tubercular deposits. The presence of cardiac or renal disease should be considered a positive contra-indication to the use of tuberculin, for the albuminuria is always increased by such treatment, and in one fatal case he believed that the tuberculin had been the cause of the parenchymatous nephritis.

A paper by DR. E. L. TRUDEAU, containing the results of his observations on tuberculin in the Adirondack Sanitarium, was, in the absence of its author, read by Dr. Quimby. He had treated eight cases with this remedy in conjunction with the climatic, hygienic, and medicinal measures usually employed at his sanitarium. Six of these cases also received treatment in the pneumatic cabinet. The injections were given twice a week, and the dose was so adjusted as to produce very little reaction. One woman with miliary tuberculosis at both apices became much worse after the injections. Small doses excited such violent constitutional reaction that at one time the temperature reached 104.5° and the pulse 160. One case was apparently cured, four were greatly improved, two were unimproved, and one was apparently injured by the treatment. He thought that the changes in the physical signs supported Koch's assumption as to the specific action of the fluid upon the phthisical process, but that it was not likely that tuberculin could confer immunity against further infection.

DR. C. E. QUIMBY had treated six cases with tuberculin, combined with the use of the pneumatic cabinet. The cabinet secured expansion of the lungs and removal of catarrhal products; the tuberculin set up specific processes in the lungs, and then the pneumatic cabinet was employed to favor absorption during the stage of activity. In one case, each injection increased the inflammatory changes in the lungs, but these rapidly improved under treatment with the cabinet. Four out of the six cases had hæmorrhages. Strangely enough, none of his patients developed a tolerance for the tuberculin. He thought the remedy was chiefly indicated when the reparative processes were adynamic.

The general discussion was opened by DR. A. JACOBI, who said that he had already spoken upon this subject before the State Medical Society. He advocated the use of small doses, since the best therapeutic effects were obtained with these. As an instance of the impossibility of predicting the effect of the tuberculin in any given case, he related the following remarkable case: The patient, a lady about forty years of age, had had tuberculosis for at least ten years; she had had tubercular tumors in the abdominal cavity, had expectorated an unusual quantity of pus, and had suffered a long time from night-sweats. There were two large cavities in the lungs, and the sputum contained numerous bacilli. In the early part of the winter she had a pneumonia, from which she recovered; and about January 10th her husband, a physician, began to treat her with tuberculin. The first dose of one milligramme was followed by no reaction, and this was increased one milligramme each day until she received about forty milligrammes,

and still no reaction occurred. The dose was then increased by two or three milligrammes daily, until about ten days ago, she was receiving 350 milligrammes daily. Although the usual reaction was not produced, it was noticed that shortly after each injection her temperature fell, and remained low for eight or ten hours. Expectoration at first became more abundant, but it soon diminished and the number of bacilli grew less, the night-sweats and fever disappeared, and the patient began to gain flesh. At present the cavities are decidedly smaller than before the treatment. In general, the treatment of surgical tuberculosis had been disappointing. He thought that the best treatment hereafter for pulmonary tuberculosis would be a combination of the climatic treatment with the careful use of tuberculin.

Dr. E. C. Wendt had employed tuberculin in 38 cases —4 of surgical tuberculosis, 7 of phthisis, 22 of "strumous condition," chiefly children with adenitis, 4 of ordinary bronchitis, and in one healthy person. In *every* case a febrile reaction was obtained, which would seem to throw much doubt upon the correctness of Koch's claim as to its diagnostic value. There was but little improvement in the four surgical cases, and although the general condition of the phthisical patients was improved, the physical signs remained unchanged. In the "strumous" cases the anæmia improved, but there was no effect upon the glands or upon the harsh respiration. The initial dose was invariably one-fourth of a milligramme.

Dr. S. Baruch had employed this remedy in sixteen cases, and he detailed the histories of two which appeared to have been cured by this treatment. He thought tuberculin had some diagnostic value, and that when cavities existed it was undoubtedly beneficial.

Dr. H. S. Stearns continued the discussion by referring to the results of two autopsies upon cases in Bellevue Hospital which died while under his treatment. The lungs were filled with recent minute miliary tubercles, and there was also general tubercular infiltration of the abdominal viscera.

In answer to a question from one of the Fellows, who had noticed a marked acceleration of the pulse and a deepening of the respirations after the injections, Dr. Kinnicutt said that he had not noticed this peculiar feature in his cases.

The President said that he had seen one such case, and so marked was the susceptibility that a dose of one-tenth of a milligramme brought on symptoms of collapse. He added that the discussion seemed to show that in tuberculin we had an agent, powerful for good or evil, and one requiring more care and more experience than any other remedy which had been given to us for the treatment of tuberculosis, but he thought it would take a permanent place in the treatment of pulmonary tuberculosis and would enable us to save many lives.

CORRESPONDENCE.

BALTIMORE.

The Ninety-third Annual Convention of the Medical and Chirurgical Faculty of Maryland (the State Medical Society) has just come to a close. The convention was opened on Tuesday, April 28th, by an address from the President, Dr. Thomas A. Ashby, who has, in addition to his practical work in medicine, done excellent service to his profession as editor of the *Maryland Medical Journal* and, later, as one of the most ardent promoters of the extension of the faculty's influence in this State. His address, entitled "The Relation of the Medical and Chirurgical Faculty to Professional Organization in Maryland," was an able review of the struggles of the faculty against the obstacles which beset its pathway during its existence of nearly a century, and of the present attainments and future possibilities of this great and now active State medical organization. The attendance at the opening of the session was larger than usual, and those who had the faculty's interests at heart felt that there was unusual enthusiasm and interest in its affairs.

The Society met again in the evening, when the reports of "sections" were taken up. A paper was read by Dr. Joseph T. Smith on "The Treatment of Diphtheria," giving a summary of the methods and agents which may be most safely trusted in the battle with this dreaded scourge; and another by Dr. J. E. Michael on "Obstetrical Antisepsis" as employed in the lying-in hospital under his charge. The earnest discussions which followed the reading of these papers, and of others which were presented, were in pleasing contrast to the apathy which has characterized some of the previous conventions. Evening sessions are a new feature in the faculty's work, having been introduced at this time for the purpose of economizing the time of country practitioners who desire to stay in the city during the days of the convention. They have been quite a success, and are likely to take a permanent place on the programmes of future annual conventions.

The central point of interest in the morning session of Wednesday was the delivery, by Professor William Welch, of the Johns Hopkins Pathological Laboratory, of the annual oration, on "The Causation of Diphtheria," which was listened to with profound interest by a large audience, and appeared in The Medical News of May 16th.

The rest of the morning was spent in listening to reports of sections. The evening session was taken up by the election of officers for the ensuing year. The nomination of the orator of the morning for President was unexpected by many of those present, but it was at once apparent from its reception that the profession of the city appreciated most highly not only the services which Prof. Welch had rendered to medicine, but the uniform courtesy and modesty, and the interest in local medical affairs, which has made him among them the most popular of the corps of medical men attached to the Johns Hopkins Hospital. It is to be hoped that the election of Prof. Welch to this, the highest gift which the profession can confer, will strengthen the ties between the physicians of Baltimore and the Faculty of the Johns Hopkins medical foundation.

The third (and last) day of the convention was spent in the delivery of reports of different "sections," and in the reading of voluntary papers, a morning and evening session being held as before.

Two prominent members of the faculty have been removed by death since the last convention: Dr.

Richard Gundry, Superintendent of the Maryland State Asylum for the Insane, and Professor of Materia Medica, Therapeutics, and Mental Diseases in the College of Physicians and Surgeons of Baltimore, and Dr. John R. Quinan, author of the "Medical Annals of Baltimore." It is doubtful if the State has any available man to fill Dr. Gundry's position. Dr. Quinan belonged to a class of physicians rich in medical lore and devoted to literary research, which is never a large one in any community.

Taken as a whole, the convention just ended has been unusually successful. The only drawback has been the absence of many country members who might have honored it with their presence. The audience which assembled to hear Prof. Welch's "Annual Address" was the largest known to members who have served the faculty through middle life into old age, and it filled to overflowing the spacious hall of the faculty. Nor was the interest limited to this occasion, for the "President's Address" attracted a full audience, and all of the exercises have been unusually well attended.

The printing of carefully-arranged programmes of the convention, and the timely distribution of the same, was a very desirable improvement.

The outlook for medicine in Maryland is certainly encouraging, notwithstanding the dishonor which has been brought upon it in past years through the jealousy of factions and the rapacity of representatives in public offices.

The printed *Transactions* of the faculty for 1890–91, containing, in addition to the papers already mentioned, articles by Prof. Newell Martin on "The Changes Wrought in Nerve Ganglia by Prolonged Stimulation;" by Dr. Hiram Woods on "The Need of State Intervention for the Prevention of Blindness from Ophthalmia Neonatorum" (which led to the appointment of two oculists and two obstetricians as a committee of the faculty to report upon the subject); and by Dr. Chisolm on "Diseases of the Eye in the Fœtus;" together with many other communications read at the present meeting and at the semi-annual meeting in the past autumn, promise to be unusually full of interest to all practitioners.

NEWS ITEMS.

The Kashmir Medical Mission.—One of the most interesting of medical mission stations is that in the Vale of Kashmir, conducted by the two brothers, Drs. Arthur and Ernest F. Neve, both of them graduates since 1881, from Edinburgh. Their contributions are not infrequently seen in our American medical journals. Their report of last year's work shows a total of 2558 surgical cases, of which about 1000 involved eye operations. Most of these were minor cases, but often important as regards the future eyesight of the patients. Eight deaths followed surgical treatment; of these, three had no bearing upon the operation. A new block of wards has been added to the hospital for the accommodation of twenty additional patients, and is the best, as well as the newest. Its cost has been about $800. The location of this hospital is at Srinagar, the capital of Kashmir, with an altitude of 5235 feet above the sea, and in a section not yet approached by railroads.

Patients come to Srinagar from all parts of Central Asia, sometimes fifteen to twenty days' journey distant to the north and east, which sections are virtually unexplored by Europeans. A majority of the in-patients come from a distance, and the missionaries are taxed to find support for them, as well as to furnish them treatment and shelter in very many instances. A woman's hospital will be built at Srinagar, with room for thirty patients.

The Climatologist.—Under the name of *The Climatologist*, a monthly journal devoted to the study of climatology will be published in Colorado Springs, Colorado, under the editorial supervision of Dr. Keating, of Philadelphia, Dr. Gardiner, of Colorado Springs, and Dr. Griffith, of Philadelphia. A distinguished list of collaborateurs has been engaged, among whom may be mentioned Drs. J. M. Da Costa, A. L. Loomis, William Pepper, E. L. Trudeau, and W. A. Edwards.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM MAY 19 TO MAY 25, 1891.

By direction of the Secretary of War, the following assignments of recently-appointed Medical Officers were ordered:

LIPPITT, WILLIAM F., JR., *First Lieutenant and Assistant Surgeon.*—Will report in person, for duty, to the commanding officer Fort McPherson, Ga.

BROOKE, BENJAMIN, *First Lieutenant and Assistant Surgeon.*—Will report in person to the commanding officer Fort Riley, Kansas.

IRELAND, MERRITT W., *First Lieutenant and Assistant Surgeon.*—Will proceed from Columbia City, Ind., to Jefferson Barracks, Mo., and report in person, for duty, to commanding officer of that post.

WELLS, GEORGE M., *First Lieutenant and Assistant Surgeon.*—Will proceed from Paoli, Ind., to Columbus Barracks, Ohio, and report in person, for duty, to the commanding officer of that post.—Par. 7, *S. O. 115, A. G. O.*, May 20, 1891.

WOOD, MARSHALL W., *Captain and Assistant Surgeon.*—Is hereby granted leave of absence for one month, to commence on or about the 23d instant.—Par. 1, *S. O. 104, Division of the Atlantic*, May 20, 1891.

BANISTER, WILLIAM B., *Captain and Assistant Surgeon.*—Is assigned to duty as Medical Officer with Troop "B," Sixth Cavalry, while *en route* from Fort Myer, Va., to Fort Washakie, Wyoming Territory. On arrival of the Troop at its destination, Captain Banister will return to his station at Washington Barracks.—Par. 3, *S. O. 104, Division of the Atlantic*, May 20, 1891.

By direction of the Secretary of War, GEORGE MCCREERY, *Captain and Assistant Surgeon*, is relieved from duty at Fort Clark, Texas, and will report in person to the commanding officer Fort McIntosh, Texas, for duty at that post.—Par. 4, *S. O. 114, A. G. O.*, May 19, 1891.

SKINNER, JOHN O., *Captain and Assistant Surgeon* (Fort Davis, Texas).—Will proceed at once to Fort Clark, Texas, and report to the commanding officer, for temporary duty.—Par. 4, *S. O. 44, Department of Texas*, May 13, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING MAY 23, 1891.

BRIGHT, GEORGE A., *Surgeon.*—Detached from the U. S. S. "Omaha," and granted three months' leave of absence.

MEANS, V. C. B., *Passed Assistant Surgeon.*—Detached from the U. S. S. "Omaha," and granted three months' leave of absence.

KEENEY, JAMES F., *Assistant Surgeon.*—Ordered for examination preliminary to promotion to Passed Assistant Surgeon.

THE MEDICAL NEWS.

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ORIGINAL ARTICLES.

AWAY WITH KOCH'S LYMPH!

BY N. SENN, M.D., PH.D., .

PROFESSOR OF THE PRINCIPLES OF SURGERY AND CLINICAL SURGERY IN RUSH MEDICAL COLLEGE; ATTENDING SURGEON, PRESBYTERIAN HOSPITAL, CHICAGO, ILL.

WHEN six months ago the telegraph operator at Berlin touched the key of his instrument and flashed to all parts of the civilized world the joyful tidings that a cure for tuberculosis had at last been discovered, the people and the profession felt that the millennium in medicine had come. For days and weeks the public press devoted a liberal space to telegraphic messages, to editorials and messages from medical men, relative to the new treatment. For months, the medical journals in all countries rivalled each other in presenting the latest reports from Berlin and other large medical centres, in the form of telegrams, correspondence, editorials and original contributions. The first announcement of the discovery brought thousands of patients and doctors to the German capital, the former to be cured of their tuberculous disease, the latter to receive instruction and to make themselves proficient in all the details of the new treatment. No other event in the world's history ever attracted so much attention and no discovery in medicine or surgery ever found such ready introduction and universal acceptation. The discoverer, the distinguished Koch, the father of bacteriology, had scored so many victories on this modern field of research that every word he uttered brought conviction. His views were promptly adopted by the most prominent physicians and surgeons in Germany and other countries, and the new treatment was applied everywhere by the best men in the profession, as fast as the precious remedy could be obtained. Within a few weeks, the most enthusiastic and encouraging reports came from scores of prominent clinics and large hospitals. Within a few months, volumes have been written on this subject, and several special works have left the press and have been translated into many languages. A new journal, devoted exclusively to the treatment of tuberculosis with Koch's lymph, has come into existence and has a good subscription-list to start with. It is true that some of the more conservative members of the profession were a little slow in accepting the new doctrine and practice, but the great majority followed the current set in motion by the great Koch and his many eminent admirers and devoted followers. It was not long, however, before the glowing accounts of the results of the new treatment of tuberculosis came at longer intervals and in a more moderate tone, and were interspersed with the reports of cases from different parts of the world in which it had proved a complete failure, and in a not inconsiderable number of cases it was charged with having caused a speedily fatal termination. Then came the timely warning of the veteran pathologist, Virchow, who showed, by numerous post-mortem examinations of patients who died while under this treatment, that death was caused by dissemination of the disease from a local focus acted upon by the lymph. The evidence proving this source of danger has been rapidly accumulating and has contributed largely toward subduing the first enthusiasm and limiting the scope of administration of the remedy. The disastrous consequences which followed the use of the lymph, perhaps often injudiciously and recklessly applied, induced a number of medical societies to condemn its use, and led some of the local governments by legal enactments, to restrain its further application. Time enough has now elapsed to judge of the merits of the treatment of tuberculosis by Koch's lymph, or, as it is now called, tuberculin. It has been put to test in the treatment of all forms of tuberculosis. Surgeons, physicians, gynecologists, obstetricians, dermatologists, otologists and ophthalmologists have given the new treatment a fair trial, and the accumulated experiences from all these sources have shown beyond all doubt that its indiscriminate use is attended with many immediate and remote dangers, and that most cases in which it at first appeared to prove beneficial have relapsed, and after weeks and months were no better or even worse than when the treatment was begun. Men who first regarded the lymph as a specific in all forms of tuberculosis no longer make this claim. Many who were enthusiastic in their praise of what they observed from the use of the remedy in the beginning have now suspended its use. Hospitals and wards set aside for the special treatment of patients suffering from tuberculosis are now deserted. The market is overstocked with a supply of Koch's lymph and Koch's syringes. Not only the profession, but also the public, has become aware that the claims made for the remedy only a few months ago are unfounded. It is left for Koch, or some future investigator, to discover a substance or agent which

will answer the expectations that were at first entertained from the lymph. Koch's lymph has been a deceptive bubble which for a short time commanded the attention and admiration of the whole world, but which has been ruthlessly pricked by the father of modern pathology. The treatment of tuberculosis with Koch's lymph and the numerous substitutes which have recently been forced on the attention of the profession will soon be only a matter of history.

My "Away with Koch's lymph!" is based upon my own observations made at the Milwaukee Hospital during the last four months' service in that institution prior to my removal to Chicago. The material is not large, but the careful observations made entitle me to enter my protest against any further experimentation with this remedy. The lymph first used I received through the courtesy of Dr. J. S. Billings, of Washington, and when this was exhausted I received an abundant supply directly from Dr. Libbertz, through the influence of my distinguished friend, Professor von Esmarch. The tuberculous nature of the lesions in all cases that came under my own care, if any doubt existed in this regard, was established by microscopical examination and search for the bacillus. As lupus of the face was mentioned in the first reports from Europe as having been cured with Koch's lymph, I was exceedingly anxious to commence treatment with this form of surgical tuberculosis.

In all of the cases treated, the local and general reactions were typical and corresponded with the descriptions given by von Bergmann, von Esmarch and others. As a rule, the injections were made every other day in order to ascertain the full extent of the local and general reaction following each dose of tuberculin. The first dose never exceeded one milligramme; in grave cases the treatment was commenced with one-half of this quantity. The dose was never increased if the temperature during the reaction following it rose above 101° F., and if this was reached, in many cases the dose was diminished or the interval between the injections increased. It is, therefore, probable that in the grave cases, the unfavorable symptoms following the injections were not so much due to the action of the tuberculin as to the intrinsic tendencies of the disease to aggravation. It is, however, an entirely different matter in the mild cases, in which, in spite of a careful increase of the dose, the local and general symptoms underwent a rapid change for the worse, because in such cases the unfavorable results must be attributed to the action of the tuberculin and not to the intrinsic tendencies of the disease. The whole number of cases treated by injections of tuberculin at the Milwaukee Hospital during the months of January, February, March and April was 43—32 males and 11 females. For the sake of convenience these can be divided into mild, medium and grave cases:

	Males.	Females.	Total.
Mild cases	8	4	12
Medium cases	11	2	13
Advanced cases	14	5	19
			44

Died in the hospital: 1 male and 1 female—2.

	Males	Females.	Total.
Aggravation of all the symptoms during treatment	14	8	22
No improvement	5	1	6
Improved	11	1	12
Apparently cured	2	...	2
Died	1	1	2
			44

Died soon after leaving the hospital: 4 males and 2 females—6.

	Males.	Females.	Total.
Of the mild cases unfavorably affected by the treatment	1	3	4
Of the mild cases improved	4	1	5
Of the mild cases apparently cured	2	...	2
			11

The two cases that were apparently cured belonged to the mild type of the disease; no such result was obtained in any of the thirty-one cases belonging to the medium or advanced form of the disease. In one of the cases that was apparently cured, the sputum contained no bacilli, and in the other there was no expectoration, consequently some doubt must remain as to the tuberculous nature of the pulmonary affection.

In the cases of medium gravity the result of the treatment was as follows:

Aggravated	5
Not improved	3
Improved	5
	13

In the grave cases the treatment was followed

By serious results in	12
By no improvement in	3
By temporary improvement in	2
By death in	2
	19

GENERAL REMARKS. *Diagnostic Value of Tuberculin.*—Great diversity of opinion prevails at the present time as to the diagnostic value of tuberculin. The first reports of the use of this substance were unanimous in attributing to it positive diagnostic value. It was claimed that reaction only occurred in tuberculous patients as a result of the specific action of the lymph on tuberculous tissue, and that the absence of increase of temperature after injection of the lymph decided the non-tuberculous nature of the affection. Leyden, Quincke, Ebstein, Weber and Biermer maintain that the absence or presence of reaction after the use of tuberculin must not in all

cases be regarded as absolute proof of the existence or non-existence of tuberculous disease. Schultze, Finkler, Guttmann, Schreiber, Lichtheim and Rumpf have great faith in the diagnostic value of the use of tuberculin in tuberculosis of the internal organs. The same discrepancy of opinion exists among surgeons as to the value of injections of tuberculin in the differential diagnosis of surgical tuberculous and non-tuberculous lesions. Bergmann relies on the reaction following the use of tuberculin in differentiating between tuberculosis on the one hand and syphilis and carcinoma on the other. Bardeleben and Kohler are reserved in their verdict as to the diagnostic value of the method. Trendelenberg regards the febrile reaction following an injection of tuberculin as an evidence of the tuberculous nature of the lesion, except in tuberculosis of the testicle. Esmarch is of the opinion that in doubtful cases the reaction following the use of the remedy is of great diagnostic value. Bramann and Mikulicz place great confidence in the presence or absence of reaction. König and Hildebrand have observed reactions in lesions resembling in appearance tuberculous affections, but which by other diagnostic aids were shown not to be of a tuberculous nature. Clinical experience has demonstrated that general reaction is produced by tuberculin in cases of actinomycosis and in certain forms of sarcomatous tumors, and that consequently this method of diagnosis cannot be relied upon in differentiating between tuberculous lesions and other affections. A number of the cases upon a study of which this paper is based furnishes conclusive proof that the susceptibility to general reaction varies greatly in different tuberculous individuals. In some, intense reaction followed the use of small doses, when the tuberculous lesion was limited; in others, suffering from extensive tuberculosis, large doses produced no rise in temperature. That in the latter class of cases the affection was of a tuberculous nature there could be no doubt from the history of the cases, the appearance and location of the lesions, the subsequent behavior of the affection; and in some of the cases the presence of tubercle bacilli in the affected tissues was demonstrated. I look upon the local reaction in affections of the lymphatic glands as a valuable diagnostic aid in differentiating, by the use of Koch's lymph, between tuberculous and non-tuberculous affections of these organs. If the enlargement of the lymphatic glands is due to a tuberculous affection, the existing swellings not only become larger, more painful and tender a few hours after the injection of a dose of the lymph, but other glands, that could not be felt before the injection, become enlarged and can be felt in the vicinity of those that were recognized before the use of the remedy; but even in such cases, I regard inoculation experiments of greater diagnostic value than injections of tuberculin, yielding more positive results without exposing the patient to the risks of local and metastatic dissemination of the disease incident to the latter procedure. If on the one hand patients suffering from non-tuberculous affections will occasionally only respond to the tuberculin test, and on the other hand, in exceptional cases, individuals suffering from well-marked typical tuberculous affections have proved refractory to the action of tuberculin, it must appear evident that the use of this substance cannot be relied upon in making a positive differential diagnosis between tuberculous and non-tuberculous affections. At the same time, if it can be shown that a single injection of tuberculin is not devoid of danger, and that implantation of the product of this disease in guinea-pigs will in the course of three or four weeks yield results which will enable us to make a reliable diagnosis between tuberculous and non-tuberculous affections, it is apparent that the use of Koch's lymph as a diagnostic resource should be discarded, or at least limited to exceptional cases.

Therapeutic Value of Tuberculin.—It is now generally conceded that many cases of tuberculosis reported as cured have since relapsed; some of these have died, and others have been subjected to different treatment. In many instances, of course, the original report has not been supplemented by subsequent communication. Since, even by the use of Koch's lymph, an absolute diagnosis is not always possible, it may be that some of the alleged cures rest on a faulty diagnosis. This applies with especial force to the two cases of pulmonary disease reported in this paper as cured. Again, it must not be forgotten that under favorable local or general conditions or improved dietetic, hygienic or climatic changes, tuberculous affections not infreqently undergo spontaneous cure, so that for nearly all methods of treatment so far suggested similar exceptional results can be claimed. Of the eleven cases of surgical tuberculosis that came under my own observation, in not a single instance did the treatment result in more than temporary improvement, and in several it was followed by local extension of the disease and serious impairment of the general health. The effect of tuberculin proved more serious in the treatment of the forty-three cases of pulmonary tuberculosis. There can be but little doubt that in a number of the fatal cases death was hastened by the treatment, and that in a number of the mild cases it contributed largely toward the rapid local extension of the lesion. While the tuberculin treatment of pulmonary tuberculosis can show no better results, it is difficult to ignore the fact that it has been productive of more harm than almost any other plan of treatment heretofore suggested, and on this score alone the verdict,

"Away with Koch's lymph!" is timely and imperative.

Dangers Attending the Use of Tuberculin.—Tuberculin when brought in contact with tuberculous tissue produces coagulation necrosis, and during this process a toxic chemical substance is produced, which, when it reaches the general circulation, causes the febrile action. The time necessary to reach this stage of its action is usually from three to six hours. The intensity of the reaction depends on the quantity of the toxic substance that is produced and finds its way into the general circulation. The general reaction is evidence of a septic condition of the organism produced by the toxic substance resulting from the action of the tuberculin on the tuberculous tissue. The evidence of temperature and the other general symptoms continue until this toxic substance is eliminated by one or more of the excretory organs. The immediate danger attending the tuberculin-treatment consists in the production and introduction into the circulation of a fatal quantity of this toxic substance. That the fear of fatal sepsis resulting from the action of Koch's lymph is not unfounded is shown by a number of such cases that have been reported. If the whole truth were known, this number would be greatly increased by unpublished cases. The more remote dangers attending the tuberculin treatment have been pointed out by Virchow. The destructive effect of the tuberculin on the granulation tissue breaks down the wall surrounding the infected area and liberates the bacilli and their spores—an event which can hardly fail to give rise to local and general dissemination. The granulation tissue, the specific primary product of tuberculous inflammation, is the wall of defence built up by the tissues to protect the adjacent parts and the organism against invasion. Any method of treatment interfering with this mode of defence clears the way for the enemy and secures victory for the invading army. If future research should lead to the discovery of a specific remedy for the cure of tuberculosis, it will be a microbe antagonistic to the bacillus of tuberculosis, or a substance which, when brought in contact with a tuberculous focus, will have an effect on the tissues opposite to that of Koch's lymph.

I have given Koch's lymph a fair trial and have carefully observed its effects, and I have become firmly convinced both of the danger attending its use and its utter inutility in curing any form of tuberculosis.

This paper has been written for the special purpose of placing myself on record as one who protests earnestly against further experimentation with this mysterious and dangerous fluid. A careful study of the voluminous literature on the use of Koch's lymph, and my own experience with it, have induced me to head this paper with the title it bears, "Away with Koch's Lymph!"

FURTHER STUDIES IN MALARIAL DISEASE.

The Parasites and the Forms of Disease as Found in Texas.

BY GEORGE DOCK, M.D.,
OF GALVESTON, TEXAS.

(Concluded from page 606.)

The Small Plasmodium.—During the season under consideration I have learned to recognize another form of the parasite of malaria, and one that is for many reasons the most important of all. Certainly from the point of view of pathogenesis and prognosis it cannot be overrated. As the description which follows makes clear, this is the form so thoroughly described by Marchiafava and Celli as the "small form" (*piccolo forme*), and which is found in the fevers which predominate in the summer and autumn in Rome.

Not having access to the proper literature I had ended my investigations on these bodies, when, through the kindness of the authors, for which I cannot sufficiently thank them, I received reprints of their articles, translations of which appeared still later in various German journals.

The reason I did not learn earlier about these bodies is that in previous seasons they occurred but seldom, and always with the large forms. In the unusually severe epidemic of the last autumn I encountered them in twenty-six cases, in only three of which the large forms were also found. In twenty-three cases only the small forms, and in some cases crescentic bodies, were found.

In eighteen of the twenty-three cases I was able to make observations at frequent intervals before, during, and after treatment, and in two cases *post-mortem*.

My attention was first called to these bodies by the peculiarities of their pigment, a matter to which I have long paid particular attention. I found a number of cases in which the plasmodia never became large, but beginning as small unpigmented bodies they grew, with characteristic amœboid movements, and formed pigment, usually in very fine granules. Becoming larger, though never more than one-third the diameter of a red corpuscle, the pigment became gathered in a roundish or irregular mass. This was the last seen of the bodies. Disappearing from the blood their place was taken in a short time by the smallest forms, and so the process was repeated.

I might have remained in ignorance of the later stage, had it not been for the occurrence of a fatal case in which only these forms occurred, and in which, owing to the short duration and severity of the disease, they could be studied alone and to great

advantage. I intend to publish the case in full, with histological studies at another time. It is sufficient for our present purpose to say that the patient, a man of twenty-three years, was sick for a few days, having been exposed in a very malarial locality. On admission the patient's condition did not seem alarming; the history pointed to a continued fever rather than to an ordinary malaria. At the first examination of the blood, however, the diagnosis of pernicious malaria was made, with a fatal prognosis, and in little more than a day the man was dead. The blood was examined for many hours, including two paroxysms, but no segmenting forms were seen. Death occurred as the forms were attaining the maximum size. At the autopsy segmenting forms were found in enormous numbers in the brain, spleen, kidneys, and some other internal organs. None were found in the peripheral blood. The segmenting forms were completely developed. In some cases they were still in the red corpuscles, in others free. They were of great regularity in appearance, having the pigment in or near the centre and from ten to fifteen or eighteen spores around it. They seemed in fact to be more regular in their arrangement than the large plasmodia. This may have been due to their small size preventing us from seeing variations such as have been described of the others.

So far as one can learn without actual comparison, this is the "small form" of Marchiafava and Celli. I did not, however, see all the varieties described by those observers—the one, for example, in which the hæmoglobin of the red corpuscle is gathered in a ring around the parasite,[1] I have never seen, nor have I been able to find plasmodia in the shrunken red corpuscles, so common in this infection.

I have never seen the larger stages without pigment. In many instances numbers of plasmodia without pigment were seen, but in such cases pigmented leucocytes or crescents showed the pigment-forming stages to be present somewhere in the body.

In the twenty-three unmixed cases typical flagellate bodies were never seen. Free bodies were frequently found, though not so often as with the large plasmodia. In one case a filament was seen on a free body, and in the spleen of the fatal case another was found, but neither had the sharply cut outlines and homogeneous appearance of the flagella found with the large forms. It may be believed that, after my statement in regard to the frequent occurrence of flagellates, I spared no pains in looking for them in these cases, but the conviction was forced on me that they were not present. On the other hand, I had opportunities for studying another form equally interesting—the crescentic body of Laveran.

The Crescents.—The origin, nature, and development of these bodies is still involved in obscurity. Much of this depends on a misconception of their actual appearance, as may be demonstrated by the statements still current that they are altered red blood-corpuscles, and from the descriptions and figures given by some writers.[1] Though I cannot hope to clear up the obscurity, I have certain facts to advance which may help to do so.

During the last season I have found crescentic bodies in twelve cases, as follows: In five cases with the small plasmodium only, in three with small and large forms, and in four (in the finger blood) alone.

The presence of the pigment shows that the crescents are derived from organisms which destroy the hæmoglobin. No one as yet has seen the complete cycle, owing to our imperfect methods of studying the organisms. The method of Plehn promises to be of value.

In all cases but four—and these I shall examine critically later—in which crescents were found in this series, the small plasmodium was found also. To believe the crescents are derived from bodies entirely similar in appearance, yet differing essentially from these in nature, as the alternative hypothesis assumes, seems quite unwarranted. Moreover, in two cases I have found the bodies held to be the intermediary forms by Marchiafava and Celli. These were as follows:

C. W., a laborer in a malarial part of Galveston, admitted to hospital October 22, 1890. Patient said he had fever, without chills, for two weeks in May, and has never been well since. For six days has had pain in back and fever without chills. Temperature at 9 A.M., 100.4°. Spleen enlarged; great anæmia.

The temperature rose in the next two hours to 106° without a rigor, and then fell, on the administration of antifebrin in one large dose, with copious perspiration.

1.30 P.M., temperature, 104°. In the blood many small amœboid endoglobular forms without pigment. A few pigmented leucocytes.

Later in the afternoon small pigment grains began to appear in the plasmodia. The temperature reached the normal at midnight and then rose slowly. The organisms in the blood were larger and contained more pigment. The approach of a paroxysm was predicted at 11 A.M. No sign of a rigor appeared, though the temperature rose to 102° and the larger of the plasmodia disappeared, to be followed in about three hours by the appearance of many small forms. Quinine was given in three doses of ten grains each during the night, but the temperature, instead of falling, rose slowly.

24th. Many plasmodia, pigmented, in the blood.

[1] Arch. per le Sci. Med., xiv., No. 8, Fig. 14; also, Fortschritte der Med., Bd. ix., No. 7.

[1] Cf. Dolega, l. c., Taf. v., Fig. 8.

In the afternoon they began to show the later stages of development, with the pigment in one large mass. About 2 P.M. these disappeared, and only small, unpigmented forms were found. At 5 P.M. the supposed developing crescents were found in considerable number. These were oval, or thick, spindle-shaped bodies, with pigment in short rods scattered through them. Usually they were in the middle of the affected corpuscles, with the ends reaching the opposite sides; but in some cases they were on one side, and then showed a curved shape corresponding to that of the corpuscle. The bodies had clear outlines, were more highly refracting than the plasmodia, and sometimes of finely granular structure, like that of the crescents. Changes in form were slight and took place slowly. Temperature, 105°.

25th. Patient had thirty grains of quinine during the night. Temperature at 10 A.M., 99°. In the blood a few small amœboid plasmodia and spindle-shaped bodies as before. The patient was by this time thoroughly cinchonized, and the temperature fell gradually to below the normal. No more spindle-shaped bodies appeared, though a few small amœboid forms could be found.

29th. The patient left the hospital, having taken three drachms of quinine.

November 27. Patient returned. States that he was well for two weeks after leaving, but that for the last twelve days he has had chills daily.

4 P.M., temperature, 102.4°, rising to 104.4° at 7, and remaining up until next morning at 10, when the blood was examined. This showed many small amœboid forms, such as are found after a paroxysm. Owing to the number of plasmodia and the prostration of the patient, quinine was given at once to the point of cinchonization.

29th. Temperature, 97°. In the blood a few pigmented leucocytes; no plasmodia.

The temperature rose for two days to 101°, then remained below normal, and the patient again left the hospital.

In the case of C. S.,[1] at the first examination a number of spindle-shaped or oval bodies similar to those described were found, in addition to the ordinary forms of plasmodium. In some instances the arrangement of the pigment in the former approached that common in the crescents, having a central position. Next day the patient was cinchonized; there was no paroxysm. The blood showed no plasmodia, but a few crescents, many of them remarkable for their slight curve and sharp ends, but almost all having the line or band on the concave side. In several the pigment was scattered along the whole length.

In the case of Th. C. (l. c.) crescents appeared on the third day, after the plasmodia had disappeared with cinchonization. They, too, were often peculiar in the arrangement of the pigment, often having it at one end.

A remarkable case in which crescents developed during the time of observation was the following:

"A. C., living in Galveston and working in the harbor, admitted November 26, 1890. Present illness began about November 1st, with constipation, loss of appetite and chill, and continued until admission. Chills were not regular, but usually came on when weather was bad, and generally about sunset. Has taken no medicine; spleen enlarged; anæmia.

"In the blood only unpigmented plasmodia were found, some of them as much as one-third the diameter of a blood corpuscle—that is, almost the full size of this form.

"The temperature rose to 101.6° at 10 P.M. without a chill.

"*27th.* Temperature at 11 A.M., 100.6°. Patient feels shivering sensations. In the blood are small amœboid plasmodia, pigmented leucocytes, and free crescents.

"The temperature remained at the point indicated until the morning of the third day, when it fell to normal within three hours, but at once rose to 100.4°. The organisms had persisted as before. Quinine was then given; the temperature fell after the administration of fifteen grains and did not rise again. Plasmodia disappeared in a short time, but crescents could be found until the patient left the hospital, a few days later."

The fact that crescents are sometimes found alone in the blood has led to the supposition that they represent a distinct species, capable of reproducing their like, though no direct proof has yet been advanced. One of my four cases with crescents only gave an opportunity for learning the possibility of a fallacy in the supposition stated. The case is as follows:

J. McG., of Galveston, express driver, admitted to hospital December 15, 1890. Patient stated he had had chills for two or three days, with fever and dull headache. Temperature at 3 P.M., 99.6°.

December 16, 6 A.M. Temperature, 100°. Soon after this a chill; patient became comatose; urine examination negative.

12 M. Patient cannot be roused; pupillary and corneal reflexes abolished; face flushed, with tinge of yellow; splenic dulness enlarged, but the organ cannot be felt.

Blood pale, watery; leucocytes increased, especially the large lymphoid corpuscles. Many crescents but no other forms.

12.45 P.M. Spleen aspirated by a hypodermic syringe below the eleventh rib, the needle pointing upward; needle moves with respiration. The blood withdrawn shows many amœboid bodies of all sizes, including some in the later stages, with a single large pigment mass; many crescents and pigmented leucocytes. The crescents nearly all show the membrane on the concave side, which those in the finger blood do not. The membrane is very easily seen; sometimes is wrinkled. The most remarkable feature about the crescents is their excessive curve. The width across the horns is not greater than that of a red blood-corpuscle, the arc being about two-thirds of a circle.

The subsequent history of the case can be condensed in a few words. Quinine was given in large

[1] Fortschritte der Med., No. 5, 1891.

doses—forty grains daily—hypodermatically. Strychnine was also used in the same way, and mustard foot-baths given. The temperature did not begin to fall until 7 P.M., five hours after thirty grains of quinine had been given. It then fell to normal. The pupils then reacted to light, but the patient could not be roused. Forty grains of quinine were given during the night, hypodermatically.

Next morning, 17th, at 10 o'clock, the temperature rose rapidly at first and by 4 o'clock reached 102.4°, when it began to fall. Up to this time the finger blood showed the same characteristics as at the first examination. During the night the patient had forty grains of quinine injected as before.

18th. The blood examination showed no change. The temperature rose from 97.4° to 98.8°. At night twenty grains of quinine.

19th. Patient still comatose, but reacts to pin-thrust. In the blood a few crescents; no pigmented leucocytes. Temperature rose from last night to 4 P.M., reaching 100.2°, then fell next day to sub-normal.

20th. Patient's mind was clear. Temperature normal. There was muscular weakness and anæmia. In a few days the man left the hospital, feeling quite well.

In this case none of the supposed transition forms of the crescent were seen. In all instances the affected blood corpuscle was entirely decolorized, though the complete membrane could not be looked upon as anything but its shell.

All the facts I have brought forward do not prove the origin of the crescents from the small plasmodium, but in view of the improbability of any other explanation of their origin that has been given up to this time, the suggested source seems very probable.

It has been asserted that the crescents undergo sporulation, giving rise to small amœboid bodies. This seems very probable, though proof is wanting. All my own efforts to observe such a process have been negative.

Equally negative have been my efforts to see another process often described—the formation of flagella on crescents or their degenerated bodies. In all of my many observations made with that object, the results have been almost identical. The crescents become oval, with double contours, then round, and finally break down into hyaline masses. Some of the common flagellate bodies have a distant resemblance to the rounded crescentic bodies.

In speculating on the nature of the crescents it seems to me we have allowed ourselves to be misled by two things—the form of the organisms and their resistance to quinine. In regard to the former, the name alone has been the cause of misconception with some, who have forced a parallel between these and the crescentic or sickle-shaped spores of the coccidia—certainly with very little reason.

As for quinine and its effects, we must bear these facts in mind: It has been demonstrated that the various forms of the plasmodium other than the crescents differ in their resistance. Thus the larger forms and those with flagella are more resistant than the smaller stages of the same kind.

Again, the small plasmodium, as shown by the researches of Celli and Marchiafava, and confirmed by me, is more resistant in all its stages than the large form. If now the crescents are derived from the small forms we have some ground for assuming their greater resistance. There is still another possibility to be considered. We have seen that there is a stage, even of the most easily affected form, which resists the action of quinine for long periods, and is then capable of giving rise to new generations. We must, therefore, consider the possibility of the similar stages of the small plasmodium, probably true spores, having a proportionately greater resistance, and we can easily see, from the last case quoted, how the intermediate stages of the development could be overlooked in the usual method of investigating.

The cause of the final disappearance of the crescents is unknown. They certainly are not often taken up by phagocytes in the peripheral blood. In the case of Th. C., after appearing in the course of the observations they soon disappeared. This would seem to show that their development had been checked at an early stage, a stage more easily influenced than the later ones or the spores.

For the present I feel justified in looking on the crescents as representing a phase in the development of the small plasmodium, and while accepting the possibility of their sporulation and producing flagella, I do not consider it a common or necessary part of their existence.

Clinical Features of Cases with the Small Plasmodia and Crescents.—The cases in which the small plasmodia occur have certain peculiarities which distinguish them from those accompanied by the large form. They are the cases described by authors as remittent or sub-continued, or even by some as continued, and a full description of which at this time would be superfluous.

Intermissions do take place. In six out of eighteen of my cases—before the administration of quinine—there were intermissions, but in these cases the apyrexia was of very short duration and the cold stage less distinct than in the paroxysms of the common intermittents.

In these cases there are also anomalies in the duration of the hot stage, which is sometimes unusually long, and not always followed or accompanied by copious sweating.

The fever curves in remittent cases present the greatest irregularity. The rise may be sudden, or may be slow and uncertain. In them rigors are absent. The patient may not feel cold at any time, or may complain of a feeling as if a soft breeze were blowing over some part of the body. The acme may be short or may last over a day (in one case at 104°). The fall may be rapid, but is usually slow. The difference between lowest and highest temperature varies from two to five (100°–105.5° in one case) degrees, but is usually between three and four.

Quotidians are the rule. In two cases a tertian curve was caused by remarkably slow fall and subsequent rise, the apyrexia or remission being of very short duration.

In two of the eighteen cases the curves were so atypical as not to give an intimation of their malarial nature. One was the case of A. C., already detailed. The other was that of a young man working on the wharves, who gave a history of diarrhœa, vomiting, headache, and dizziness for three weeks, without a chill, with fever for seven days. There was slight anæmia and the spleen was enlarged. The blood showed small plasmodia and crescents. The patient remained in the hospital four days, the temperature ranging between 98° and 100°, and the diarrhœa having been checked, he left, with the blood as before.

Symptoms, sometimes of great severity on the part of the stomach, brain, and other organs, have always been present in my cases. The cases are too few to serve as a basis for comparative diagnostic points. They agree closely with the descriptions, especially of those who have given us the best accounts of tropical malaria.[1]

In many cases, not only from the anamnesis, but also from the symptoms and the temperature curve, it would have been difficult to distinguish between malaria and some other infection—for example, enteric fever. It is important to note that in none of the cases in which such doubts could have arisen, and in which the microscopic diagnosis of malaria was made, did quinine fail to be followed by a fall of the temperature to normal or below, usually within two days, sometimes in three or four, with cessation of all symptoms except those due to anæmia, and with subsequent recovery.

I hold, therefore, that the ability to recognize the true nature of certain of our fevers by the microscope is of great practical advantage, and should be applied when possible, and that in the scientific study of these fevers, to ignore the plasmodium is to make our conclusions impotent.

In regard to the cases in which crescents occur, my experience agrees with that of Laveran and of Celli and Marchiafava. Though most constant in cases of advanced malarial anæmia, they also occur, as the foregoing pages indicate, in cases of comparatively short duration, and in which the term cachexia could hardly be applied.

The blood in cases showing the small plasmodium is in certain respects remarkable. In the first place, one does not see the large, pale, flattened corpuscles so common with the other forms, but the corpuscles are often smaller and darker. Poikilocytosis is very common, especially the internal alteration causing the so-called vacuoles. The latter, it may be observed, can never be a cause of confusion to the practised observer.

The most marked feature in the blood in these cases is the regularity of appearance and number of the pigmented leucocytes. Out of 26 cases with small plasmodium they were found 14 times, and of the other cases 5 were seen but once, and the rest were of short duration, in which the disease was soon jugulated. In most cases they were very numerous. The pigment was usually in roundish masses, and evidently derived from the matured segmenting bodies. Frequently one leucocyte could be seen with several such masses. The leucocytes that were so affected were almost all large ones, evidently endothelial in origin.

Decrease in the number of red corpuscles and increase of leucocytes, especially the large lymphoid corpuscles, is a common feature of the blood in these cases, and, in those showing pernicious features leucocytosis may be intense (1 : 5 in one of my fatal cases).

I have described the various organisms as they occurred in all but one of the 41 cases which came under observation last year. I preferred to speak of this case by itself, on account of its peculiarity. The clinical history has been given in the *Fortschritte der Medicin* (loc. cit., J. B.), and need not be repeated. It was a case of atypical malaria, with a history of continued fever, but the one paroxysm observed in the hospital was preceded by complete apyrexia. The organisms were very numerous. Examined in the acme, they were peculiar in that the segmenting forms were of great regularity. They were about two-thirds the diameter of a red corpuscle, with the pigment in the middle, and six or eight round or oval spores around it. Unfortunately, I could not get dried preparations, and, as it was necessary to cinchonize the patient, no further observations could be made.

The Relation of the Different Forms of Plasmodium to Each Other.—As has been shown by the foregoing, there are a number of forms of the organism which vary widely in appearance, mode of growth, and type of disease they accompany. Are we to look on

[1] See Schellong: "Die Malaria-krankheiten, etc.," for interesting remarks on this Protean disease.

these as being all members of a polymorphous species, or are there different species or genera?

Evidently this question cannot be definitely decided until we have more accurate methods of studying the parasites. The experiments of injecting blood from various kinds of cases, as practised by our Italian colleagues, have had contradictory results. This is all we could expect in view of the sources of error in such experiments. The disproportion between the amount of blood injected and even the largest quantity that one could examine is so great that certain forms might be overlooked. Or, it might be that the spores of one form could be circulating in the blood, but, on account of a temporary or permanent immunity, not be able to reach full development, and yet in another host rapidly perform their full cycle, with the result of impressing their peculiar features on the disease.

The reasons for believing in the existence of different species (genera?) are, in short, as follows:

1. The different forms may exist by themselves, or combined, but in the latter case no transition from one to the other can be seen, but both continue distinct.

2. Either form may accompany cases of malarial disease of atypical course and symptoms, but in cases which show pernicious features the small forms are always to be found.

The forms I have described explain all cases of malaria in which they occur. The large form with the tertian or quotidian intermittents and some mild atypical cases; the small form with usually quotidian cases, almost always atypical in symptoms, and often pernicious.

This does not exclude the possibility of a distinct form for quartan fevers. Never having seen a case of that kind, I cannot consider it particularly, but must look on it as a necessity. I also believe there may be other varieties. At the same time I think we must accept the view that the active life of any one generation is not in a fixed relation to the daily rotation of the earth, but liable to variations.

The belief in the existence of various species or genera of malarial parasites does not essentially alter the view usually held as to the unity of malarial disease, but gives scientific ground for explaining certain clinical facts which, under other suppositions, have always been difficult to understand. This applies to cases of pernicious malaria especially.

To conclude, then, the special object of this communication, we find in a certain number of malarial localities of wide geographical distribution a number of kinds of parasitic organisms. We find, also, that these agree, in appearance and mode of development, with the organisms found in similar classes of cases in other parts of the world, especially with those found in temperate climes, like Germany and the northern United States, and those with tropical temperatures, if not latitudes—Italy and Algiers.

It does not enter into the scope of this paper to consider the pathology of malaria, yet there are certain points in regard to it on which a word may be said. It has been stated that the discovery of the plasmodium malariæ does not clear up our knowledge of the disease. Such statements show an unfamiliarity with the subject. One of the most marked morbid changes in malaria, destruction of red blood-corpuscles, with formation of melanin, can be followed from beginning to end under the microscope. In a case of pernicious fever the extent of this is so great as hardly to be believed, unless one sees the fact. It is sometimes said that the segmentation of the parasites explains the paroxysms. Mechanically this is difficult to understand. Nor do the results of pathological investigations make this clearer. The formal occlusions of vessels by the parasites and the congestions of various internal organs explain certain symptoms; but in the cases with the most marked intermittent course we have no reason for believing that these are prominent factors. It is difficult to believe the remarkable symptoms in pernicious cases are due to the effects of the bodies acting mechanically on the nerve centres. Many of them point strongly to the action of chemical substances. There are certain facts known which lend strength to such a supposition. Many protozoa have the power of dissolving cellulose, woody fibre, and starch, and of coagulating albumin. Krukenberg has discovered a peptonizing ferment in *fuligo varians*. All the parasitic monads living in certain plants produce a substance, probably an acid, which alters the color of chlorophyl, and many produce substances which completely decolorize the pigments of their hosts.

Metchnikoff and his pupils have shown that though the protoplasm of protozoa gives an alkaline, the fluid in the vacuoles gives an acid reaction.

The rapid digestion of hæmoglobin and its transformation into the bodies of the plasmodium and melanin is evidence of powerful metabolism. Can we believe that no other substances result from this? On the contrary, it seems as if such processes must necessarily result in the production of chemical substances capable of powerfully affecting the organism in which they are formed. Such substances would be excreted by the usual organs, and it may even be that the vomiting so common in the paroxysms of malaria is due to an excretion by the stomach similar to that which we know occurs with morphia.

Chemical examinations of the blood and excretæ should throw a light on this subject. The only investigations of the kind I can find are those of

Roque and Lemoine.[1] They examined the urine of one case of tertian intermittent, and of two cases of malaria acquired in Algiers, in which albuminuria occurred in consequence of alcoholic excess, and recurrences of the malaria took place in France.

The authors' conclusions are as follows:

"Malaria produces a large quantity of poisonous products; these are excreted mostly by the urine, and the excretion reaches its maximum immediately after the paroxysm.

"Sulphate of quinine favors and increases this excretion.

"The severity of the paroxysm and certain pernicious forms stand in reverse proportion to the quantity of excreted toxine, and appear in consequence to depend on disturbances in the liver and kidneys.

"The disappearance of the paroxysm is probably dependent on the quantity excreted, in the sense that an energetic excretion appears to precede the end of the disease."

Nothing is said in regard to the nature of the toxic body or the mode of detecting it. I think, however, it is not claiming too much to say that such investigations will explain the pathology of malaria, in all the details not yet cleared up, by our knowledge of the pathological anatomy in connection with the development of the plasmodium.

A communication like the present one is of little value by itself. If, however, it lead to other investigations on the same or improved lines, our knowledge and control of one of the banes of our existence will be materially increased.

THE DIAGNOSIS OF TRAUMATIC LESIONS IN THE CEREBRO-SPINAL AXIS, AND THE DETECTION OF MALINGERING REFERRED TO THIS CENTRE.

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THE counterfeit cannot be detected without an accurate knowledge of the genuine, and, in addition to this, an exact knowledge of the counterfeit, together with a definite knowledge of the difference between the genuine and the counterfeit, is still imperatively required.

It therefore follows that whoever would attempt the detection of malingering should always be able to diagnosticate concussion of the brain and spinal cord. The proper performance of this task requires a full knowledge of the etiology, semeiology and pathology of the morbid condition under consideration. Let us therefore direct our attention to these essential factors of diagnosis, carefully analyzing each in order that we may more thoroughly comprehend their relation and bearing on each other. It is universally admitted that concussion of the spinal cord most commonly follows falls upon the feet, the buttocks, and less frequently upon the hands when both arms are out-stretched; gunshot wounds involving portions of the spinal column; a stroke of lightning; heavy blows delivered over the bones of the pelvis or in the line of the spinal column.

The direct effect of these falls and blows is the production of contusions of the soft parts, etc., which are more or less disorganized by these traumatic agents. The force of these agents is not by any means entirely expended in the production of these contusions, but there will be carried along the bony structures a vibratory motion which will also be imparted in varying degrees to the adjacent soft parts. A very fair idea may be gained of these vibratory movements by placing the hand on the apex of a bell, suspended in the air, while its base is struck with a metallic hammer; or by the touch of a properly keyed string of a musical instrument when it has been put in motion. The same vibratory motion may also be very well illustrated by tapping gently with the finger on a glass jar or other vessel which is partially filled with jelly and then watching the tremulous movements imparted to the contents by the slight blows delivered on the vessel. The attention of the medical profession has been frequently called to the peculiarities of concussive or vibratory force by French authors, but its physiological and pathological action has never received that careful study to which it is entitled. A very important factor which presents itself for our consideration in connection with the study of this force is the fact that it is not transmitted equally well by the various organs and tissues of animal bodies; and, consequently, a direct blow delivered on one part of the body may be entirely negative, or result in the production of very little vibratory action, while on another part of the organism the results will be very marked. Thus a blow delivered directly on the nates will give rise to this concussive force and be transmitted along the spinal column to the bony walls of the skull, and from this structure to the brain itself, which is in such close contact with these bones. A portion of the same force will likewise be expended in varying degrees on those organs in intimate contact with this line traversed by the traumatic agent. The functional disturbances and the pathological changes in the various organs will depend on the physiological functions, weight, texture, etc., of the parts involved, and these need not be enumerated here.

A blow delivered on the feet, while the lower extremities are extended, will be transmitted to the

[1] Recherches sur la Toxicité Urinaire dans l'Impaludisme. Rev. de Méd., 1890. Centralbl. f. Bakt., etc., ix. p. 353.

bones of the pelvis and then along the spinal column. A somewhat similar result may possibly be produced by a fall on the hands when the arms are extended; though the force of this blow will be much diminished by reason of the anatomical differences in the parts, particularly the less intimate connection between the bones of the arms and the spinal column than exists between the bones of the lower extremities and this important highway for the transmission of concussive force. It should likewise be remembered that the more concentrated the direct traumatic force, *i. e.*, the smaller the area to which it is applied, the greater will be the amount of concussive force generated, while the other factors remain unchanged. Thus a blow covering an area of four square inches delivered directly over any part of the spinal column will generate far more concussive force than it would if spread over the whole posterior region of the body. In fact, in the former case, if the blow was a severe one, functional derangements and pathological lesions might rationally be expected to follow from the concentrated nature of the concussive force, but in the latter they will be looked for in vain. There is a very marked difference between the concussion in the case of gunshot wounds produced by musket or rifle balls and that which follows heavy blows or falls; in the former the pathological changes are more circumscribed, while in the latter they may be considered general. Thus, a musket ball having found lodgement in the vertebral column, and in some degree having impaired its outer surface without producing any lesion of the osseous tissues within the canal, the spinal cord will frequently be found in an ecchymotic state at a point near the lesion in the spinal column. In connection with this subject, it may be stated that no single blow, however great its momentum, delivered on the anterior surface of the thorax or abdomen could rationally be expected to produce concussion of the spinal cord, since its force would be expended almost entirely on the visceral organs within these cavities. The study of the effects of lightning, and likewise those of electrical currents of both high and low degree of potency, possesses very great interest for the surgeon in connection with the consideration of concussive force.

The vibratory character of electrical currents is apparently identical with the other forms of concussive force; and it is readily demonstrable that the physiological action, functional disturbances and pathological changes possess essentially the same characteristics. The fact has long been recognized by the ablest authorities that concussion is physiologically indicated by a nervous and circulatory excitation or depression. In accordance with this opinion Verneuil has given the following definition of concussion: "A series of phenomena more or less sudden followed by a mechanical disturbance of the anatomical elements, tissues, and organs, characterized by a temporary excitation or a depression of the functions of the parts disturbed, and likewise producing anatomical changes, are generally observed in cases of functional activity or repose." Mechanical concussive force, like lightning strokes and electrical currents, may produce every possible degree of concussion, varying from the slightest functional disturbances which pass off within a few seconds, to instantaneous death. Further similarity in the effects of these agents is shown by the fact that concussion and even death may be produced by rapidly repeated mechanical blows or a rapid succession of electrical strokes, while a single impulse would be scarcely sufficient to cause even temporary functional disturbance. The pugilist knows that to render his antagonist unconscious the blows should be delivered upon the head. He therefore seeks to deliver in rapid succession blow after blow until his object is accomplished. Experimentation on animals has shown that concussion of the brain may be caused by slight taps with a hammer delivered on the head in rapid succession.

In our consideration of the etiology of concussion of the cerebro-spinal axis we have said little in regard to its causation in the brain. It is probably understood, however, that those agencies which have already been mentioned are the important factors in its production in this organ as well as in the other organs of the body. The same general laws pertaining to the etiology of this morbid condition are as applicable here as elsewhere, consequently a blow delivered on the head will be more efficacious in the production of concussion of the brain than would be the concussive force had it been transmitted to this organ from some other part of the body. Furthermore, the weight of this organ and its other anatomical peculiarities must receive due consideration.

In the attempt to describe the symptoms of concussion in the cerebro-spinal axis we immediately encounter a difficulty arising from the fact that the functions of these organs are materially different, and consequently the symptoms observed in connection with a traumatism in the spinal cord will produce entirely different symptoms from those found when a similar lesion exists in the brain. The remedy for this difficulty is very simple and only requires that the symptoms be separately noted as they pertain to lesions in the different organs. A much more serious obstacle is found in the combination of all sorts of injuries with those of *pure* concussion, especially those having their origin in fractures, dislocations, sprains, rupture, and stretch-

ing of ligaments, particularly in the spinal column, and likewise with the concussion in one organ the symptoms of which are erroneously attributed to this morbid condition in another. In illustration of the above-mentioned error, I desire to call attention to the fact that hæmaturia is frequently mentioned as a symptom of concussion of the spine, while I have conclusively shown by my experiments on animals that it bears no constant relation to lesion of the cord, but, on the contrary, following concussive accidents, *indicates a concussion of the kidney.*

Furthermore, visual changes are frequently attributed to concussion of the spine, although as a matter of fact the lesions on which these changes depend are situated either in the brain or the eye. I am now prepared to assert that the greater part of the organs within the thorax and abdomen are equally as liable to suffer from concussive force as the brain itself; and likewise that concussive accidents are much more frequent in these visceral organs than in the spinal cord. This assertion is based on the fact that these lesions are entirely analogous to those observed in the brain, merely requiring that the proper allowance be made for differences in weight, texture, etc., factors which must be taken into consideration in connection with the study of the lesions of concussion in the brain and spinal cord. Furthermore, every true concussion takes its origin in the same peculiar force. Therefore, if it be desirable to speak of concussion of the brain, spinal cord, etc., why should it not be applied to the lungs, liver, kidneys, etc.? Would it not be absurd to speak of gunshot wounds of the brain and spinal cord, while the term is withheld from analogous lesions caused by the same peculiar force in other parts of the body? An attempt has recently been made to employ the term "nervous shock" instead of concussion; but this departure possesses no advantage and has already caused much confusion. No attempt is here made to deny that certain portions of the nervous system participate in the concussion; although it is self-evident that the functional disturbance and pathological lesions are primarily developed in connection with the *circulatory system.* These preliminary comments are made in preference to any attempt at the mere enumeration of symptoms, which, in order to possess real value, must be fully stated and explained. It should likewise be remembered that there are different degrees of concussion and these differences are indicated by a corresponding difference in symptoms.

It must now be apparent that the limits of this article compel me to economize space, so far as it can be done without defeating the object for which it was written. Permit me, therefore, once more to call attention to the fact that concussion always produces either excitation or depression, *i. e.*, functional activity or repose. The former condition possesses practically little interest, if observed immediately after the application of the concussive force, since it is commonly of short duration, and does not require any attempt at treatment. However, there is another form of excitation occasionally observed in severe cases of concussion of the brain which commonly makes its appearance from twelve to forty-eight hours after the receipt of the injury. This condition is indicated by a full pulse, flushed face, throbbing of the carotids, headache, hot and dry skin, photophobia, noises in the ears, and sometimes marked drowsiness. These symptoms point to the existence of cerebral hyperæmia, which is commonly of short duration; but in some cases it is the prelude to inflammation of the brain. In the severe cases of concussion of the brain or spinal cord the prompt appearance of *symptoms indicative of depression* commonly suggests the existence of organic lesions, rather than mere functional disturbances; while, as a general rule, the degree of danger is fairly expressed by the depression. It should, however, be remembered that the symptoms of depression, in order to possess any special value, must pertain especially to the functions which are known to be performed by these organs. Therefore, a diminished consciousness, although the patient may be aroused sufficiently to answer questions, the pupils contracted or dilated, relaxation of the sphincters, a feeble and irregular pulse, shallow and sighing respirations, a cold, pale, and clammy skin, are symptoms that point very clearly to the brain as the seat of the injury when the symptoms have followed promptly after the application of concussive force. The symptoms following those above recorded belong to the reactionary period; the object of this paper does not require their mention here. Concussion of the spinal cord is most commonly indicated by the appearance of paralytic symptoms, which frequently involve the lower extremities, especially the motor power and likewise in many cases also the sensory. Therefore in our experiments made on dogs our attention was promptly directed to the movements of these animals immediately after the application of the concussive force.

The following facts possess an important bearing on the subject now under consideration. From a recent summary made from my "Experimental Study of Lesions arising from Severe Concussion" I shall here venture to cite the following: "Paraplegia is a very important indication of a lesion of the spinal cord and may have its origin either in a disease or traumatism. This morbid condition may be either complete or incomplete, and when due to

disease it is commonly slowly progressive; but if due to traumatism it is rapidly manifested and soon reaches its fullest development. In support of this statement examine the following facts: The whole number of cases in which pathological changes were found in the cerebro-spinal axis was fifty; the whole number of cases in which any indications of these lesions were observed during the life of these animals was thirty-three, while our record shows that in the last-mentioned class there were twenty-three cases of paraplegia."

It will here be observed that there were ten cases in which there had been noted during the lifetime of these animals some indication of traumatism, but which did not exhibit during that period paraplegic symptoms. It is also worthy of notice that in every instance these paraplegic symptoms were observed immediately after the application of the concussive force; and, furthermore, that in all cases of complete paraplegia there was not a single case which subsequently improved. In the large majority of cases of incomplete paraplegia there was commonly some improvement observed during the first three days, but in a few instances the paraplegic symptoms became more marked during the first twenty-four hours; however, even these cases soon showed signs of improvement. It is not claimed that even the immediate appearance of paralytic symptoms after the application of concussive force establishes, in all cases, the existence of pathological lesions in the spinal cord. I am strongly impressed with the idea that an injury of the peripheral nerves may be followed by temporary, and commonly, local paralysis. A certain degree of importance should be attached to the existence of either anæsthesia or hyperæsthesia in all cases where lesions of the spinal cord are suspected. The existence or absence of pain in these cases possesses very little interest for the diagnostician. In fact, the existence of pain and soreness ought probably to be looked on as having their origin in a contusion, sprain, or wrench, involving the vertebral ligaments, muscles, etc., rather than indicating lesions of the cord. Having now presented a few of the characteristic symptoms of true concussion of the brain, and likewise of the spinal cord, I desire in this connection to add that it is certainly very unfortunate for the science of surgery that it has hitherto been the custom of nearly all authors, writing on what they have unfortunately designated *concussion*, to group together half a dozen or more traumatic conditions, differing radically from each other in their *etiology*, *semeiology*, and *pathology*. It requires no prophet to assert positively that so long as this grouping is continued there will be a want of clearness in all these articles; that theory will be frequently introduced in the place of scientific facts; that clinical observation will continue to mislead the profession; that good-natured authors, believing that all their predecessors in writing on this subject have told a little truth, will still further add to the existing confusion in their attempts at compounding these incompatible ideas. Let me ask what would be the inevitable result, if medical authors should group together under the unfortunate cognomen of "Smith's disease," scarlatina, diphtheria, rubeola, roseola, variola, typhus fever, etc.? But this combination is no more objectionable than that grouped under the name of "railway spine," which is so frequently employed by so many of our surgical authors even at the present time. However, the dawn of a new light may be approaching, since Dr. John A. Lidell, in writing on "Injuries of the Back, including those of the Spinal Column, Spinal Membranes, and the Spinal Cord," states that "The traumatic lesions of the back naturally arrange themselves in three groups, as follows:

"1. Injuries of the integuments and muscles, or soft parts generally.

"2. Injuries of the vertebral column.

"3. Injuries of the spinal membranes, spinal cord, and spinal nerves." [1]

It must be apparent that this classification presents many important advantages over that commonly employed. Another serious source of confusion has arisen from the fact that the term concussion was, in former times, restricted in its application to the brain, although analogous pathological lesions were produced by the same force in nearly all the organs of the body.

Furthermore, concussion was badly defined by the old authors; because the term was used to indicate a condition induced by a more or less violent shaking of the brain, whereby serious symptoms were produced without lesions of the structures. Recent experiments on animals and a careful study of this subject have entirely failed to support their statements in regard to the non-existence of lesions after concussive accidents in the brain and spinal cord. The results of my experiments were very conclusive in regard to the existence of these lesions. There were fifty cases in which pathological changes were observed in the cerebro-spinal axis, but only thirty-three of these cases showed any symptoms of injury of this centre during life; it will, therefore, be readily seen that in seventeen cases, although pathological lesions existed, they were not made apparent by symptoms which could be recognized in the animals. It is also noteworthy that there was not a single case in which the existence of concussion of the cerebro-spinal axis was even suspected,

[1] The International Encyclopædia of Surgery, vol. iv. p. 668. Edited by John Ashhurst, Jr., M.D. New York: Wm. Wood & Co., 1884.

wherein by our subsequent examination, we failed to discover pathological lesions, *post-mortem* or *microscopical.* These pathological lesions in true concussions are certainly unique in character and nearly or quite pathognomonic in significance. The only lesions that bear semblance to the pathological changes of concussion are those arising from contusions, and these are localized and not distributed generally throughout the organ, as is commonly the case in the former morbid condition. However, there is found an exception to these rules in the case of concussion following gunshot wounds, in which the injury is commonly localized and more or less closely resembles the ecchymotic appearance arising from contusions. The functional disturbances and the pathological lesions are clearly shown in my experiments to have had their origin in the vasomotor system. In order to illustrate the pathological changes in the spinal cord which have been observed to follow in a mixed or complicated case of concussion of this organ, I will here cite the report of an autopsy, etc.,[1] made on the body of a coal-porter, who had died thirty-four hours after the accident:

"*Autopsy*: There was no external trace of injury. The membranes of the cord were healthy. The substance of the cord was contused opposite the fourth and fifth cervical vertebræ. On section there was found ecchymosis of the posterior horns of gray matter on the left side, and of the adjacent part of the lateral and posterior columns. There were also limited spots of ecchymosis on the right side, one in the right posterior column and one in the right anterior horn of gray matter. The gray substance, generally, was hyperæmic. On removing the spinal cord and membranes nothing abnormal was discovered in the vertebræ until the posterior ligament had been dissected off, when it was seen that the body of the fourth was separated from that of the fifth, and the left articular process of the fourth had been chipped off."

Dr. John A. Lidell, who reports this autopsy, comments on it as follows: "The essential features of this instructive case are as follows: (1) The cord substance was injured by concussion and not by any displacement of the parts. (2) The injury was attended by a number of minute extravasations of blood (ecchymoses) in the gray substance. (3) There were anæsthesia and loss of motion in both lower extremities and in the left arm. (4) There was paralysis of the sphincter ani and sphincter vesicæ, which denoted that the reflex motor apparatus was also paralyzed. (5) The anæsthesia passed away in the course of some hours, the return of sensibility being noted first in the parts most distant from the injury. (6) Hyperæsthesia appeared synchronously with the reaction from 'shock,' and steadily increased in severity. (7) Hyperæmia of the gray substance was found as well as ecchymosis. It should be remarked that the hyperæsthesia was more severe in the right arm than elsewhere, and this part had not at any time been paralyzed." This case was reported by Dr. Lidell as a pure or uncomplicated one of spinal concussion, but I am compelled to qûestion the correctness of the report in this particular, and direct attention to the ruptured ligament which it seems to me may have permitted a partial dislocation to have taken place, with contusion of the cord, the vertebræ afterward having been restored to their proper position by the natural resilience of the parts. The symptoms of paralysis were certainly more marked than they are usually in cases of pure, uncomplicated concussion of the spinal cord. The following microscopical report conveys a very clear idea of the pathological lesions observed in our experiments on animals in the cerebro-spinal axis when there were no complications in this centre:[1] "Brain intensely hyperæmic, otherwise normal. Every portion of the cord intensely hyperæmic. There were punctate hæmorrhages in the dorsal and cervical regions of the spinal cord, in both the anterior and posterior horns, also in the middle commissure."

The striking analogy existing between the lesions in cases of death caused by electricity and the other cases of concussion may be probably better illustrated by citing the report of the autopsy made by Dr. Carlos F. McDonald on the body of William Kemmler after execution by electricity, since this examination has been more carefully detailed than any of the others. The others, however, entirely agree with McDonald's, so far as given. McDonald's report is as follows: "Rigor mortis marked. On incising the skin over the sternum the blood which escaped was unusually dark and fluid and remained so on exposure. Lungs: Tardieu spots were noticed on the posterior border of the lower lobe of the left lung, also in the middle lobe of the right lung. Heart: Valves and substance normal, ventricles empty. Liver: Blood from cut surface of dark-crimson hue. Gall Bladder: Distended with bile. Spleen: Normal. Kidneys: Both markedly congested. Brain: *Capillary hæmorrhages* were noted in the floor of the fourth ventricle, also in the third ventricle, and in the anterior portion of the lateral ventricle. The perivascular spaces seemed to be distended with serum and blood." Dr. Spitzka's report of the preliminary microscopical examination is as follows: "The brain,

[1] International Encyclopædia of Surgery, vol. iv. p. 790 et seq. Edited by John Ashhurst, Jr., M.D. New York: Wm. Wood & Co., 1884.

[1] An Experimental Study of Lesions arising from Severe Concussion, p. 22 et seq. By B. A. Watson, M.D. Philadelphia: P. Blakiston, Son & Co., 1890.

spinal cord, and peripheral nerves appeared strictly healthy in every part examined, except in the area corresponding to the discolored (anæmic through the contraction of the vascular channels) area of the Rolandic and pre-Rolandic regions, the ventricular surface, the pons and the medulla oblongata. The latter, which had been the seat of post-mortem preservation of temperature approaching that of the normal human body, were distinctly softer than the observer has ever been accustomed to find these parts in autopsies on persons of Kemmler's age, so soon after death. The hæmorrhagic spots in the fourth ventricle, which were strongly marked, were not accompanied by signs of parenchymatous rupture of large bloodvessels. Hence they may be regarded as having the same significance as the 'taches de Tardieu' found on the surfaces of the organs, notably the heart and lungs. The peculiar softened vesicular zone of tissue underlying the outermost layer of the cerebral cortex is noteworthy as 'the destruction line,' and runs parallel to the free surface of the brain without dipping with the sulci. Examination of the fresh specimen revealed the existence of vacuoles (probably gas bubbles) in the ganglion cells and in the parenchyma of the destruction line. From the fact that no hæmorrhages had occurred in this softened area, it is a just inference that it was produced after life had become entirely extinct, for the continuance of a blood circulation in a softened brain area is incompatible with the bloodless appearance already noted, and the absence of capillary hæmorrhages in this very district, while they were present in those remote from the site of the electrode."

In order to approach the consideration of *malingering* it is necessary to devote some attention to the traumatic conditions which frequently complicate concussion in the cerebro-spinal axis; since the majority of authors still include these morbid conditions under the head of "spinal concussion," "railway spine," etc. Fractures and dislocations of the vertebræ require little attention at the present time, since they are generally easily diagnosticated, the only exception to this rule being those cases where there is a complete absence of deformity, which may be the case where the fracture consists in chipping off a portion of the articular vertebral surface, etc., or in an incomplete dislocation of a vertebra in which the natural resiliency of the ligaments and muscles has restored the symmetry of the parts. In these cases, it is thought that the careful and observing surgeon will not be compelled to remain long in doubt as to whether the patient before him is a malingerer or suffering from a real traumatic injury—since the prompt appearance of objective symptoms will certainly be largely dependent on the locality of the injury, while their degree of severity will depend very much upon the extent and character of the traumatism.

There now remain for our consideration in this connection contusions, sprains, twists and wrenches of the back, which on account of their medico-legal bearings are entitled to a more thorough analysis than can be given them in this article. The study of these morbid conditions will be greatly simplified by bearing in mind that their symptoms, the primary and secondary effects, are entirely analogous to injuries of the same character in other parts of the body. It is claimed that the spinal column and the bones which connect directly with it are provided with ninety-nine articulations. The symptoms which characterize the morbid conditions now under consideration are pain, swelling, tenderness under pressure, and occasional ecchymoses. The existence of the symptoms will be limited to the area involved in the traumatism, while the degree of severity will depend on the intensity of the injuries. In some cases there may be constitutional disturbances which will aid in establishing the existence of a morbid condition. The ecchymoses and swelling are objective symptoms, and consequently entitled to due consideration, while the pain, stiffness, and tenderness under pressure may require confirmation. The verification of the patient's statements on these points, and frequently on others, especially questions involving the existence of paralysis, might be definitely put at rest by the proper use of an anæsthetic, which ought to be frequently employed in medico-legal cases. The general surgeon no longer hesitates to employ this agent in his private and public practice for diagnostic purposes; and why should it not be thus employed for the purpose of securing justice in our courts?

Drunkenness and syncope may make the diagnosis more difficult in certain cases of concussive accidents, whether it be pure or complicated concussion; but these factors are of short duration, and therefore cannot long continue to embarrass the surgeon.

It is unfortunately too frequently the case that a surgeon commences his examination in medico-legal contests after *having fully formed an opinion*, or at least a bias or prejudice. In many cases, in fact almost universally, this arises from the want of an analytical mind and of any carefully arranged system of examination. These are very serious defects in the expert witness, and when fully demonstrated should disqualify him from testifying. There is another serious defect frequently observed in the members of our profession, which sometimes has its origin in laziness, although occasionally in an inordinate greed, where the physician has been accustomed all his life to give an opinion to a patient without either

an examination or thought. It will be perceived that I have not yet reached the case of the malingerer; but I have thus far merely paid my respects to those who aid and assist the malingerer. The malingerer is certainly entitled to a careful and thorough examination, and each surgeon employed in the case ought to proceed in his examination with the same degree of care and caution that the most conscientious chemist would exercise when required to make a chemical analysis in the interest of justice. It therefore becomes highly important to learn the true history of the litigant, and likewise that of his father, mother, brothers, and sisters. All these matters have a special bearing on the case. It will be readily admitted that any person who has established a good character for truthfulness and honesty ought not to be classed with a mere adventurer. In the examination of all the factors involved in these cases of so-called "railway spine" the fact should never be lost sight of that *correct scientific opinions can only be reached by a systematic, methodical, and painstaking investigation.*

Let us here present a brief *résumé* of some of the points which have been more or less considered in this paper:

1. As used by those who first employed it, the term concussion was erroneously defined, and in its application, unfortunately restricted to the brain. These errors had their origin in a deficient knowledge of the pathological lesions engendered by concussive force.

2. Concussion is a more or less violent shaking or agitation of various organs in the body, producing functional derangements dependent on vasomotor changes and well-defined pathological lesions.

3. Concussion may be either general or special—general when several organs are involved at the same time, or special when the entire concussive force is expended on a single organ.

4. The symptoms arising from concussion will chiefly depend on the extent of the pathological lesions and the functions of the organs.

5. The frequency with which concussion will occur in any particular organ will depend on the point to which the concussive force is applied; the relative weight of the organ; the character of its texture; the protection afforded by its anatomical surroundings.

6. The fifth statement supplies the explanation of the comparatively frequent occurrence of concussion of the brain, lungs, liver, and kidneys, as compared with that of the spinal cord.

7. Concussion of the brain and spinal cord is always attended with immediate symptoms.

8. Concussion of the brain or spinal cord without immediate symptoms is a mere hypothesis, a myth, and has no real existence.

9. There is no pathognomonic symptom of concussion in any organ of the body, but a thorough, systematic, methodical examination by a skilled surgeon will secure a correct diagnosis.

Finally, I desire to reiterate the fifth conclusion, expressed by Dr. Henry Hollingsworth Smith in a paper which he read before the surgical section of the American Medical Association in 1889, and which is as follows: "No physician should go into court and swear that a plaintiff has had a concussion of the spinal cord, or of its nerves, unless he has proved the disturbance of the normal functions of the cord, as shown in sensation, or motion, or both, and that the symptoms appeared *soon* after the injury."

ORIGINAL LECTURES.

PLEURISY WITH EFFUSION—SIMPLE ENLARGEMENT OF THE THYROID GLAND.

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GENTLEMEN: I show you this afternoon this young man, who is fifteen years of age. He comes to us saying that about two or three weeks ago (he does not state the exact time, which is a point to be noted) he began to complain of some transient pains in the side, and that he felt languid and tired. A week or ten days since, he began to notice that there was some difference in the contour of the two sides of the chest, this difference being sufficiently marked to call his attention to the fact that there was something wrong with his chest, and to-day he comes for advice. We will examine him to see what we can find. The imperfect history is one point in this class of affections to which I desire to call your attention. His pulse is 100, and his temperature 101° F. You notice, as you look at the boy with chest stripped, that there is considerable difference between the two sides, the left being fuller and more prominent, especially in the mammary region, and not so flat as the other (right). This prominence in the mammary region on the left side is not important. In young people, before the cartilages have attained growth and firmness, some deformity in this region is often found as a result of pressure on the yielding cartilage, especially when there has been rhachitis; it is of no importance in this connection, so that we do not pay much attention to the prominence which you see in this case. You notice, also, that behind there is apparently some lateral curvature of the spine; the shoulder on the left side droops somewhat, and there is distinct bending of the spinal column. The reason for that you will see later on. There is an absence of pulsation in the cardiac region, but a marked pulsation to the right of the sternum, at about the third and fourth intercostal spaces; this is due to the displacement of the heart; hence there is an absence of pulsation in the natural cardiac area. This may be due to effusion into the pleural cavity; to extensive emphysema in one lung; to tumors in the mediastinum; or to extensive retraction of the lung, with pleuritic adhesions, so that the heart is displaced.

These causes are not factors in the displacement of this boy's heart. We must go farther to find the reason for it. So much for inspection. On palpation there is a loss of vocal fremitus on the left side, while the fremitus on the right side is exaggerated. The percussion note is flat on the left side, and a little more resonant on the right side. In regard to the percussion note being flat all the way up, you know your text-books tell you that in pleurisy with effusion you have flatness below the line of fluid, and above it you have resonance of a tympanitic quality, or increased resonance, which may be due to some compression of the upper lobe of the lung of that side, or to slight condensation. In cases with a moderate amount of effusion, the lung being pressed upward, you will get percussion resonance of a tympanitic quality if the upper lobe is not compressed; if the fluid nearly fills the pleural cavity, and the upper lobe is moderately compressed, the resonance is increased. In this case the left side is practically filled with fluid, so that the flatness is uniform up to the first rib. The vocal resonance is more or less distinct all over the left side, and the respiratory murmur can be heard all over the left side and at the angle of the left scapula distinctly, having a marked bronchial character. That is not in accord with the signs of palpation and percussion. The sounds we have elicited by palpation and percussion are those of pleurisy with effusion, yet we should not be able to get with pleurisy and effusion the vocal resonance or respiratory murmur. I want to call your attention to the fact that there are exceptions to all of these cases, and that you cannot go absolutely by the classical signs as laid down in your text-books. You will find cases of pleurisy with effusion in which you can get distinct vocal resonance below the level of the fluid, and you get distinct respiratory sounds. In those cases of pleurisy with effusion in which the chest is half full of fluid, as a rule you have the classical signs of pleurisy; you have absence of all signs below the level of the fluid. When the chest is almost or completely filled, and the lung is compressed against the spinal column and against the opposite side, you get a transmission of sound if the bronchi are still patent. Some of the books tell you that in some cases of pleurisy with effusion you get breathing of a bronchial character at the angle of the scapula. I want you to listen to see how distinct it is in this case. It is not vesicular in quality; it is bronchial in character, the same as is observed in croupous pneumonia, with the exception that it is further away. It is not quite so harsh, and it has the sensation of being produced at a greater distance, because of the indistinctness with which it is transmitted through the fluid. So that, taking the exceptions in this case into account, we would make a diagnosis of pleurisy with effusion, notwithstanding the fact that we get the sounds so plainly all over the left side of the chest. The scoliosis here, which is slight, is probably due to the weight of the fluid, and will probably disappear on removal of the pleural contents, as will also the displacement of the heart.

The most important point in the differential diagnosis of this affection pertains to croupous pneumonia. There are other diseases of the chest which will simulate it more or less, such, *e. g.*, as emphysema and those diseases of the chest which give you dilatation of the chest wall—chronic pleurisy, empyema, pneumothorax, etc. Any of these diseases will simulate pleurisy with effusion, from the fact that they will dilate one side of the chest. But the most important differential diagnosis is to be made between this disease and croupous pneumonia. Both may give loss of motion of the affected side of the chest; both give you compensation by the opposite lung; both are usually unilateral; both give you changes in the physical signs which may be very much alike. You get the dulness, with the exception that in croupous pneumonia the dulness is not so complete, and it does not approach the complete flatness that you may get in pleurisy with effusion. The vocal fremitus in croupous pneumonia is increased instead of diminished or absent. The voice-sounds in croupous pneumonia are increased; you get bronchial breathing and increased vocal fremitus. You get bronchial breathing on this (left) side at certain points, so that, although the classical signs of the two diseases are entirely different, the diagnosis is not so easy when you get a case of this kind, in which you have bronchial breathing at certain points in the lung; you have to be careful to distinguish it from pneumonic consolidation of the entire lung. Though the physical signs of the two diseases may be at times very similar, other symptoms are the more sudden onset in pneumonia; the character of the pain; the character of the dyspnœa; the temperature range; character of the sputa—rusty and sticky in pneumonia, frothy and white in pleurisy, etc. In differentiating this disease from emphysema, you can do so by the character of the respiration and the tympanitic character of the percussion sound in emphysema. There is not much likelihood of confusing emphysema and pleurisy with effusion, for the reason that the former is more or less two-sided. It occurs at times on one side only. It may be confusing from chronic pleurisy or empyema. You are to make the diagnosis a good deal by the history. Chronic pleurisy will, at times, give you the same signs as are present in this case, but, as a rule, you have fever and sweats, and much exhaustion, although it may be so confusing that the diagnosis is only to be made by withdrawing some of the fluid. Again, you cannot always tell with absolute certainty that the fluid in the chest is serous or (more or less) purulent. The differentiation from pneumothorax is to be made by the rapid dyspnœa which occurs. There is perforation of the pleural tissue, the result of destruction of lung tissue in tuberculosis; there is a sudden rupture into the pleural space, causing intense dyspnœa, coming on rapidly, and being persistent. This may also occur from gangrene, pneumonia, or, as in a case reported, by the bursting of a distended air-vesicle or dilated bronchial tube. Of course, after this has occurred, the physical signs will differ; you get dulness in the lower part of the chest cavity, where there is fluid, and tympanitic resonance above the fluid; you get the cavernous breathing of a metallic character at the point where the opening in the pleural membrane has taken place. If the opening is closed you may not get respiration of a metallic or cavernous character. You may get the sound or metallic tinkling, both of which are characteristic.

One peculiar feature about this case is the degree of displacement of the heart and the comparatively little dis-

tention of the intercostal spaces of the left side. The intercostal spaces, as you see, are not at all bulging. Bulging is laid down in the text-books as one of the prominent symptoms when there is a quantity of fluid present. You must take into consideration the size of the chest wall, its thickness, the resistance of the hard and soft parts, the character of the organs contained within the chest, the degree of development they have attained, and the likelihood of adhesions of various kinds which may limit their displacement. When a young boy has an even chest cavity, is perfectly healthy, there are likely to be no adhesions of the pericardium or pleural membrane to prevent displacement. When there are no tumors present in the chest, when the chest wall is elastic, you can readily see that the pressure may be felt more by the organs in the chest cavity than by the chest wall; therefore there is considerable displacement of the heart without very much distention of the intercostal spaces. We find the heart over on the right side of the sternum, and the lung is markedly compressed against the opposite side, sufficiently so to cause distinct bronchial breathing through considerable fluid.

It has been pointed out as important in distinguishing the character of the fluid contained in the chest, that in fluids containing pus you get little or no transmission of voice-sounds, although the fluid may be thin, but that in the case of serous fluids you are apt to get the transmission of sounds as you do in this case. That, of course, you would expect from the nature of the fluid —a heavier fluid moves with greater difficulty, and therefore the sounds are not so easily transmitted. It is sometimes difficult to determine whether these collections of fluid are unilocular or multilocular. You may have divisions of the pleural cavity into two or more compartments, and for that reason you may have localized collections of fluid. It has been pointed out that the zone extending around the side of the chest, about the level of the sixth intercostal space from the mammary region to near the spine, in which you obtain more marked vocal sounds than you do in any other portion of the chest, indicates that there are pleuritic bands which convey sounds to the chest wall. This can hardly be depended upon as a diagnostic sign, but it might be of use.

Now, as regards the treatment of this class of cases. It depends upon the stage in which you see the patient. It is good practice to occupy two or three weeks in trying to remove the effusions before you resort to surgical interference, provided the effusion is not great enough to compromise the patient's lungs by pressure in that short space of time. Such treatment will consist mostly in the use of diuretics, acetate and citrate of potash, and the administration of iodide of potash, citrate of caffein, digitalis, Fowler's solution of arsenic, if there is anæmia, and iron. In these cases you get little or no kidney action until you improve the general nutrition by the administration of iron. After some little time with the use of this treatment, if the fluid does not disappear it is proper to resort to surgical interference. In those cases in which, as in this one, there is marked compression of the lung, it is well to remove a certain amount of fluid in order to make room for expansion of the lung, and room for absorption by the pleural vessels. Take a chest cavity distended like this; the pleural vessels have all sustained a good deal of lateral pressure, and after removing a small quantity of fluid from one of these cavities the rest of the fluid will disappear rapidly, because it removes the pressure on the vessels and permits of their taking up the fluid, thus allowing expansion of the lung.

In cases in which the diagnosis is not so clear as in a typical case, there can be no harm by the introduction of a hypodermatic needle in order to determine the presence of fluid. The danger of the introduction from an aseptic hypodermic needle is practically nothing. I have for a long time practised the introduction of the needle in order to determine principally the character of the fluid. Even in a case like this, in which we are not in doubt as to the diagnosis, it is well to introduce it in order to determine if the fluid is flaky, and if it will run through a small needle. I have never seen any bad results from the introduction of the needle or from aspiration when the instruments were clean. I once had an inexperienced assistant reverse the action of the pump, and pump quite a quantity of air into the chest of a man seventy years of age, without any bad result. (Professor Patton then introduced the needle of an aspirator and withdrew about three quarts of serum.)

Here is the Le Noel pump, a very complete instrument, the needle of which, you see, has a blunt sliding point, arranged so as to cover the sharp end of the needle after it has entered the pleural cavity, and thus prevent injury to the lung. In this instance there is no danger of injury if the needle is properly handled and we will use the ordinary aspirator.

SIMPLE ENLARGEMENT OF THE THYROID GLAND.

The young lady I now present to you has been under treatment at the clinic here for some time. The case is one of those you frequently see, the diagnosis of which may be troublesome. She has an enlargement of the thyroid gland, a bilateral enlargement involving the isthmus, with a good deal of protrusion of the neck, which annoys her considerably, and she is unable to cover it. The gland is soft, does not exhibit any murmur, and is uniform in its enlargement. Now, the interesting point in this case is whether the diagnosis should be simple enlargement, cystic enlargement, hypertrophy of the gland, or whether it is exophthalmic goitre, which, of course, makes a great deal of difference in regard to both the treatment and prognosis. The differential diagnosis between simple hypertrophy of the thyroid gland and exophthalmic goitre is not the easiest thing in the world. Enlargement of the gland is one of the three classical symptoms of Graves' disease, and it is, as a rule, preceded by cardiac symptoms. The term cardio-vasomotor disease, which was applied by Simpson to exophthalmic goitre, is a much better term, because it expresses not only the pathological relations so far as we know them, but it expresses the clinical elements which present themselves. As a rule, the cardiac symptoms are the first to appear. There is palpitation of the heart, either constant or spasmodic, with a good deal of pulsation in the arteries, followed by some cerebral symptoms which accompany the change in the vascular tension—that is, giddiness, dizziness, and at times a tendency to syncope. As a rule, I say, these symptoms present themselves before the enlargement of

the gland. The enlargement of the gland may appear simultaneously with ocular protrusion, or may precede it, or may follow it; but in some cases the enlargement of the gland comes first, and it is difficult to tell whether you have a case of exophthalmic goitre or one of simple enlargement of the thyroid gland. You must remember that in young girls it is a very common thing to have simple enlargement of the thyroid gland with rapid action of the heart—that is, there is a tendency of the heart to run up to 120 or more, because the vascular tension is low, and there is a lack of innervation of the vascular system. Such patients are anæmic; their appetite is not good; the mucous membrane presents the appearance of chlorosis, only it is not so well marked. It is a frequent thing for girls in this condition to have enlargement of the thyroid gland, which, preceded by cardiac manifestations, may very readily be mistaken for exophthalmic goitre; but you will hear no murmur in the gland, and it will not be followed by ocular symptoms. In the case of this young girl the diagnosis of simple enlargement of the thyroid gland was made, and she was put on tonic and alterative treatment, and the result so far has been satisfactory. From quite a marked enlargement, the gland has become smaller and smaller. She has been under treatment some five or six months, until now there is simply a little broadening of the throat; and I think the cardiac symptoms have mostly disappeared. If you listen over the aortic area, there is little intensification of the second sound of the heart; it is a little more marked than it should be, showing that the heart and vessels have not quite regained their proper condition.

The treatment she has been under has been iron, iodide of potassium, and biniodide of mercury. The form of iron given in this case was the same as you give in chlorosis—Blaud's pills. In those cases which present vascular symptoms—and this is virtually a vascular disease—we give nux vomica to increase the innervation of the vasomotor system. The iodide of potassium she has been taking in ten- or twelve-grain doses, three times a day, with the biniodide of mercury externally. In using this ointment there is no advantage in employing a strength so great as to cause irritation of the skin. It should be used strong enough to be absorbed without blistering the skin. It will, perhaps, cause a little irritation, redness, or soreness, but it should not blister. The strength to be used would be about half and half, the biniodide ointment of the strength of the Pharmacopœia, with any of the excipients, such as vaseline, cosmoline, lanolin, or any of the bland ointments. She has been using half vaseline and half of the biniodide, which produces just enough redness of the skin so as not to be sore, and yet have plenty of it absorbed. She is doing nicely.

Some time ago I saw a young lady, about twenty years of age, who was troubled with thyroid enlargement accompanied by cardiac palpitation. Owing to the fact that another member of the family had died of exophthalmic goitre, her physician had made up his mind that her case was also one of the same kind. After careful examination of the gland, the circulatory organs, etc., I came to the conclusion that it was a simple enlargement of the gland from loss of innervation of the vessels, loss of tone, and anæmia, and under the same treatment that this patient has been under she recovered completely. There is now no enlargement of the gland, no palpitation of the heart, and she is in good health. These cases are interesting to me on account of the frequency with which we see them, the difficulty sometimes in making a diagnosis, and the necessity of making a diagnosis in order that you may promise relief by your treatment. Intra-parenchymatous injections of iodine, carbolic acid, etc., will sometimes be of benefit in thyroid enlargement, though some cases of hypertrophy of the gland do not seem to do well under such treatment. Electricity is also very valuable in some rapid enlargements of the gland, but the results are not always permanent. Finally, there are some cases of long-standing enlargement of the gland which can only be remedied by surgical procedures.

MEDICAL PROGRESS.

Excision of an Aneurism.—Kimura (*Sei I. Kwai. j.* December 27, 1890) reports a case of popliteal aneurism in which excision was successfully performed. After the preliminary incisions the popliteal nerve was held aside and ligatures applied to the popliteal artery above the aneurismal sac, and to the anterior and posterior tibial arteries, below, and the sac dissected out. The operation occupied an hour. The cure was complete.—*Revue Internationale*, April 25, 1891.

A New Method of Treating Ununited Fractures of the Patella.—Wolff (*Deutsche medicin. Wochenschr.*, May 14, 1891) approximated the fragments of a fractured patella, which had failed to unite, by means of four double-pointed nails bent in the shape of horseshoes, in the broad portion of each of which were two holes. Four openings were bored into each fragment of bone and into them the nails were introduced and made fast. Approximation was accomplished by means of silver sutures passed through the holes in the nails. Slight loosening of the nails necessitated a secondary operation, five weeks after which the nails were permanently removed. Though the union of the fragments was not osseous, the result was eminently satisfactory, there being no separation of the fragments and function being admirably restored.

Antiseptic Dentifrice.—Dujardin-Beaumetz:

℞.—Acidi carbolici	. . . .	gr. ss.
Acidi borici	. . . .	gr. x.
Thymol	. . . .	gr. ½.
Spts. menthæ piper.	. . .	♏j.
Tinct. anisi	. . . .	♏v.
Aquæ	. . . . .	fl℥ij.

Sig.—Rinse the mouth and brush the teeth after each meal.—*L'Union Méd.*, May 9, 1891.

For Pulmonary Tuberculosis.—Potain:

℞.—Sodii chloridi	. . . .	gr. xlviij.
Sodii bromidi	. . . .	gr. xxiv.
Potassii iodidi	. . . .	gr. v.
Aquæ destillatæ	. . . .	fl℥j.

Sig.—A teaspoonful every morning in a glass of milk.—*L'Union Méd.*, May 7, 1891.

Treatment of Chronic Articular Rheumatism.—During subacute exacerbations antipyrin or sodium salicylate should be administered in small doses, long continued. In the intervals, arsenic in doses of from one-twenty-fourth grain to one-eighteenth of a grain, and from five to ten grains of iodide of sodium, at meal time, or from ten to fifteen drops of tincture of iodine daily, may be given. POTAIN recommends warm baths, preferring pool-baths to tub-baths, of one or two hours' duration. With this should be combined tepid douches of sulphurous water to the diseased articulation. Galvanization with the continuous current is preferable to faradization. The latter acts rather upon the muscles, the former upon the nutrition. The action of the iodide is favored by administration in an alkaline mineral water. If tincture of iodine is used it should be largely diluted. The degree of tolerance can be increased by the conjoint administration of a preparation of opium, such as paregoric.—*Revue Gén. de Clin. et de Thérap.*, April 29, 1891.

Intra-laryngeal Thyroid Glandular Tumor.—PALTAUF (*Wiener med. Presse*, May 10, 1891) reported to the Society of Physicians of Vienna the case of a girl, twenty-one years old, admitted to Albert's clinic with extreme dyspnœa. After tracheotomy had been performed, a tumor was discovered below the right vocal band. Suppuration subsequently set in in the left lobe of the thyroid gland, followed by septicæmia and death. At the autopsy, among other things, below the right vocal band was found a tumor as large as a bean, acinous in appearance, seated upon a ring of cartilage and constituted of the normal tissue of the thyroid gland. On the hyoid bone was a supra-hyoid gland, a portion of which was contained within the bone. The growths were not considered to be accessory thyroid glands but normal thyroid tissues which had gained entrance by proliferation into the larynx through the intervening structures.

The Diagnosis of Pulmonary Cavities.—SCHULTZE (*Centralbl. für klin. Medicin*, May 9, 1891) quotes Weil: "The certain recognition of pulmonary cavities is one of the most difficult problems in physical diagnosis." There are few symptoms indicative of the existence of large cavities. Such a condition is to be suspected when "changes of position give rise to alternating dulness and tympany on percussion." That this symptom may prove deceptive and may result from the existence of a system of small cavities is illustrated by the case reported. A shoemaker, forty-eight years old, suffered from progressively increasing cough, expectoration, shortness of breath and loss of flesh. There was evening fever and the ends of the fingers were clubbed. The lungs were emphysematous, the sputum abundant and fœtid, containing elastic fibres. Râles were heard at all parts of the chest and loud, bronchial breathing at the lower part of the left lung. In the sixth intercostal space on the left, there was dulness on percussion, when the patient sat upright, which disappeared when the recumbent posture was resumed. A diagnosis of pulmonary gangrene, with a large cavity, was made. Operative interference was contemplated, but Trendelenburg suggested the existence of a number of small cavities. The patient rapidly failed and died. The administration of myrtol failed to overcome the offensive odor of the sputum. The autopsy disclosed the existence of extensive bronchiectasis in both lower lobes, with loss of pulmonary structure in places.

The Fermentations of Milk and their Prevention.—PROFESSOR H. W. CONN, in a lecture before the Connecticut State Board of Agriculture, thus summarizes his conclusions as regards this subject:

1. The fermentations of milk are varied, although only a few are commonly recognized, because the souring of milk usually obscures all other fermentations.

2. All of the fermentations, except that of rennet, are caused by microörganisms getting into the milk after milking and growing there.

3. The microörganisms are so abundant around the barn and dairy that they cannot be kept out of the milk by any degree of care.

4. The bacteria which produce the abnormal or unusual fermentations, like slimy milk, bitter milk, etc., are, however, not so common but that they may be prevented from entering the milk in sufficient quantities to produce serious trouble.

5. Filth is ordinarily their source, and cleanliness the means of avoiding them.

6. The souring of milk cannot be prevented even by the greatest cleanliness.

7. Salicylic acid in proportions of 1 : 1000 may be of some little value in delaying the souring, but its use is not to be recommended except in special cases.

8. Milk can be entirely deprived of bacteria by the exposure to a temperature of from fifteen to twenty degrees above that of boiling water, or by a long-continued boiling, or by a series of short boilings on successive days.

9. Such milk has the taste of boiled milk. This taste appears at about the temperature of 160° F. Hence has arisen the method of Pasteurization of milk. By this method it is heated to a temperature of 155° F. for a short time, and then cooled. This greatly delays the fermentations, and also kills the pathogenic germs that may be present.

10. In our large cities the popularity of sterilized milk is rapidly increasing, especially given to patients troubled with diseases of the digestive organs.

11. The cooling of milk immediately after it is drawn from the cow is of the greatest assistance in delaying the fermentation, and in the present state of our knowledge is probably the most practical method which can be recommended.—*Science*, May 15, 1891.

For Gonorrhœa —

℞.—Creasoti . . . . 10 drops.
Extract hamamelis fl. } of each 15 "
Extract hydrastis fl. }
Aquæ rosæ . . . . 2 fl. ounces.
Aquæ . . . . . 6 " " —M.

Sig.—Use as an injection.

—*Journ. de Méd., de Chir. et de Pharmacol.*, April 20, 1891.

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SATURDAY, JUNE 6, 1891.

AN INTRODUCTORY WORD.

THE incoming editor considers the duty of his journal to be that which, in large, is the duty of medicine itself—the furtherance of practical therapeutics. But a significant qualification at once arises—practical therapeutics must, at this time, be scientific therapeutics.

The worker in any abstract science does not think of practical ends, but pursues truth alone. And this is a noble ideal. But the family physician must often, and indeed generally, fix his attention almost solely upon the very practical details of the cure of concrete disease—an equally high and worthy aim. In the differentiation of function brought about by modern social conditions and progress, these two classes of workers are very prone to become too sharply contrasted, each pursuing its single way, forgetful of the other. Medical journals are bountifully present, the aims of which seem to be to furnish prescriptions for memorizing or copying, to satisfy childish or prurient curiosities, or to supply medical rules of thumb that should have been taught by common sense or learned during the first year of college study. This field having been so excellently occupied, we shall not attempt competition.

On the other hand, laboratories and periodicals devoted to pure scientific research, physiological, bacteriological, or pathological, have been everywhere multiplied, extended, and delimited until the humble practitioner of medicine almost despairs of keeping in touch with such amazing specialization and development.

It is the glory of medical science that in aim and strain it is at once genuinely scientific and intensely practical; and it is believed that the great majority of physicians in their work earnestly desire this union of science and utility.

Now it is precisely to this majority and with this purpose that THE MEDICAL NEWS would minister. It would keep in view this duty of becoming yet more adequately the medium for the dissemination of a scientific but at the same time a thoroughly practical prophylaxis and cure of disease. It is incontrovertible that true medicine is conditioned upon an accurate knowledge of pathogeny and pathology, but it is also beyond contradiction that the final end of all medical work is either to prevent or heal disease. The abstractly true or scientific must and will somehow become practical or useful, and the concrete or practical must always be the object of scientific study.

Our aim will, therefore, be to serve as the intermediary for bringing to the busy practical worker the useful results of original medical research, and the concrete lessons of many single rich experiences. In this work we confidently look for the sympathy and help of contributors and subscribers.

A brilliant and striking illustration and realization of such an ideal as we have described very appositely occurs in the present issue of THE NEWS: When, from the examination of a drop of blood taken from a patient's finger, hitherto unsuspected disease may be diagnosticated, and either a heroic treatment that saves life instituted, or a speedily realized fatal prognosis announced—our faith in our science at once rises, and our power over disease is vastly increased.

OBSTETRICAL AND EDITORIAL HOMOLOGIES.

IN his lecture before the American Academy of Medicine, PROFESSOR PARVIN most deftly hit off certain aspects of the work of the editor of a medical periodical. It is rare that great learning and experience, both scientific and literary, are so happily joined with a touch so light and accurate; one almost fails to see the seriousness behind the banter and the smile. *Inter alia* he said:

"No man should attempt the duties of a medical

editor unless he is a good obstetrician, especially as it relates to the diagnosis of pregnancy and the care of premature and feeble infants. Let me remind you that Socrates, in Plato's Theætetus, states that he is the son of Phanærete, a brave and burly midwife; that he practised midwifery; that he attended men and not women; that he practised on their souls when they were in labor; and, lastly, that his art had its triumph in thoroughly examining if the thought which the mind brought forth was a false idol or a true birth.

"Let me press the analogy a little further: The medical editor ought not only to differentiate between true and false pregnancy, but he should also be able to tell whether gestation has reached the normal term. Unfortunately, errors in diagnosis are very frequent. Pseudocyesis is not uncommon; tympanitic distention may be mistaken for pregnancy, and when the delivery takes place it is simply expulsion and explosion of gas. True brain-babies may be born, but they are too feeble to live unless carefully cared for in an incubator by the editor; an article, prematurely reporting a case alleged to be cured by an operation, may be kept by the editor until the cure is established; it may be written in execrable English, but the wise editor will put good clothes on the child before permitting it to appear in public. I am sure that we all meet every few weeks with papers appearing in reputable though probably not the best medical journals, to which the criticism just made can be justly applied.

"I am sorry to say that medical editors are sometimes ignorant of the characteristics of a child born at term; they fail to recognize the average weight such a child should have, the degree of development and activity it should manifest, and consequently present their readers with imperfect specimens of medical reproduction.

"It occasionally happens that a doctor without any reproductive power, or endeavoring to produce offspring every few weeks, when his pregnancy ought to last several months, is compelled to evolve from his inner consciousness, without any conception having occurred, that which passes for a baby with some, but is purely artificial. Laying aside metaphor, cases which never occurred are sometimes reported in medical journals; some keen and experienced eye will discover the sham, while many suspect that the story is pure fiction. May the day come when all medical editors will be wise enough and brave enough to exclude from their literary museums all artificial curiosities.

"The medical editor may be engaged in procuring abortion. Thus, there is a case of true pregnancy, but gestation has by no means reached its term; the editor with few contributors, and printers clamorous for copy, extorts from this pregnant doctor the promise of an article long before he can properly prepare it; it may be a fee, or friendship, or promise of influence, or something of like sort which is the abortifacient, but it does the work."

DA COSTA — BARTHOLOW.

IN unanimously electing DR. J. M. DA COSTA Emeritus Professor of Clinical Medicine and DR. ROBERTS BARTHOLOW Emeritus Professor of Materia Medica and Therapeutics, the Trustees of the Jefferson Medical College have paid a graceful tribute to the greatness of two distinguished teachers. Thousands will unite with us in hoping that, though withdrawn from their more active professorial duties, both may long continue to carry on their labors, each in the respective department of which he is a recognized representative, and to increase the number of their unexcelled contributions to medical literature and progress. Professor Da Costa will continue as heretofore to deliver his clinical lectures at the Jefferson College Hospital.

SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Forty-first Annual Session, held at Reading, June 2, 3 4, and 5, 1891.

TUESDAY, JUNE 2D.—FIRST DAY.

THE Forty-first Annual Session of the Medical Society of the State of Pennsylvania, and the first session of the Association as an incorporated body, convened in the Academy of Music, Reading, on the morning of June 2d. It had been almost forty years since the organization last met in this city, and the delegates from the various County Medical Associations of the State received a cordial welcome from their fellow-physicians of the County of Berks.

The President of the Society, Dr. Alexander Craig, of Lancaster County, called the meeting to order at 10 o'clock. After addresses of welcome by the Mayor of the city, the Hon. T. P. Merritt, and the Chairman of the Committee of Arrangements, Dr. S. L. Kurtz, the remainder of the morning was devoted exclusively to the hearing of reports and the transaction of new and unfinished business.

On motion of the permanent secretary, Dr. William B.

Atkinson, of Philadelphia, Dr. Hiram Corson, of Montgomery County, who was president of the Association forty years ago, and Dr. S. P. Ziegler, of Cumberland County, a president of more recent date, were invited to the platform.

Dr. Charles W. Dulles, Chairman of the Committee on Incorporation, announced that a charter had been granted to the Association through a decree of the Court of Common Pleas, No. 4, County of Philadelphia, and that the first meeting of the Incorporators of the Society had been held in Philadelphia on March 25, 1891, Drs. John Curwen, W. T. Bishop, A. M. Miller, John B. Roberts and Charles W. Dulles being present. At this meeting trustees had been elected, and the officers selected at the last annual meeting of the Association had been indorsed. Dr. Dulles offered a resolution that the officers of the Medical Association of 1890–91 be requested to hand over to the Incorporators at the present meeting all papers and other articles connected with their various offices. Carried.

Dr. George B. Dunmire, of Philadelphia County, submitted the Treasurer's Report. The total receipts for the year had been $2907.52, and the expenditures $2097.64, leaving a cash balance in the treasury of $809.88.

Dr. W. Murray Weidman, of Berks County, moved that a committee of one from each County Medical Association be appointed by the President of the Society to take measures toward the adoption of some method of raising funds for the erection of the Rush Memorial Monument, as proposed by the American Medical Association. Dr. Atkinson moved that each county be requested to suggest to the President the most available man for this purpose. Dr. Craig appointed Dr. Weidman chairman of this committee, after which the motion was carried as amended.

At the afternoon session the Address in Medicine was delivered by Dr. J. CHRIS. LANGE, of Allegheny, his subject being "Some Considerations Regarding New Remedies and their Use by the Profession." He founded his remarks upon the aphorism that disease is to be treated by the destruction of its cause—that is, it is to be antidoted, just as poisoning by arsenic must be antidoted by the hydrated oxide of iron. He included under the caption "New Remedies" all preparations and products not officinal in the United States or other Pharmacopœias, and dwelt largely upon the question of proprietary medicines in their relation to medical ethics. He claimed that such drugs should only be used upon a clear indication founded upon experimental study, and he proceeded to show that in the vast majority of instances the drugs which have been foisted upon the profession and public at large as specifics in certain diseases, or to antagonize certain symptoms, have, after careful investigation, been proved to be lacking in the virtues which have been ascribed to them. In support of this statement he cited the failure of Chian turpentine to produce a cure in carcinoma, although at one time highly lauded. He deplored the employment of such new and popular remedies, when other and thoroughly tested drugs are ignored or used only as a last resort. He argued that if the profession employ legitimate medicines in cases of extremity, why should they not all the more be employed in conditions of lesser gravity. While admitting that elegant pharmacy has been an acceptable outgrowth of the efforts of manufacturing pharmaceutists, and that the elixir and the coated pill are great improvements over the tincture and the old-fashioned pill, he feels that the physician deserts scientific medicine when he permits the druggist to delude him into believing that his combinations, in association with some pleasing vehicle, are more valuable than the physician's prescriptions.

DR. A. B. BRUMBAUGH, of Huntingdon, followed with an "Address in Hygiene." He spoke of sanitary science as having found its way into the highest esteem of the profession. In reviewing the older theories and beliefs upon the various departments of hygiene, he said that the time was when clear water was regarded as pure and suitable for drinking purposes, simply because of its transparency, although it emitted an offensive odor; and formerly a single dip in the neighboring brook, once in a summer, was deemed all that was necessary to insure proper cleanliness of the skin with attendant good health. He urged that to insure a better professional understanding of hygienic subjects, the course of medical instruction should be lengthened, and a knowledge of the microscope more generally diffused. He deplored the fact that in this country the physician's preliminary course of education was too elementary. Prevention, he continued, is better than cure, and he who finds a way of preventing consumption will be greater than he who finds a cure for that disease. As regards the disposal of the dead, he emphasized the truth that cremation is the one practical solution to this question. The proper disposal of the excreta of the living is an equally vital subject, and thousands are dying from criminal neglect in regard to this. As cremation is the only proper method of disposing of the dead, so fire is the only thing which will remove this other great evil. He believes that the day may come when preventable sickness will be regarded as a crime.

The subject of "Tapeworm" was considered by DR. JOHN M. BATTEN, of Pittsburg. After reporting some cases he dwelt upon the question of treatment. Dr. Shaw, of Pittsburg, recommended a mixture of kamala, ʒj, and ethereal extract of male fern, ʒij, in one ounce of the syrup of acacia, the whole to be given in two doses, half an hour apart. Barclay, of the same city, has had success with chloroform where other remedies have failed. Allison recommended the cocoanut, while Camp preferred doses of castor oil, followed by ten or twelve-grain doses of thymol at intervals of fifteen minutes, the whole followed by a dose of castor oil. At the time of the expulsion, the patient should sit over a pail of warm water to facilitate the discharge. He believes that in cases difficult of expulsion the head of the worm is attached low down in the intestinal canal. Squibbs recommends the following mode of treatment: After fasting, the administration of a saline aperient (two Seidlitz powders) to produce a copious effusion of serous liquid, which will wash away the mucus from around the head of the worm. In the morning a second dose of the aperient should be given, and after the bowels are open, one-third of an emulsion—made by beating four ounces of pumpkin seed, including the shell, in water enough to make a pint—should be given, and at two hour intervals the remaining two-thirds, the whole fol-

lowed by a dose of oil. Should this fail, the oleoresin of male fern, in ten-grain capsules, may be used, two every three-quarters of an hour until eight or twelve have been taken. It was formerly supposed that the tænia solium was the most common variety of tapeworm in man, but it is now known that tænia saginata is most frequently found.

DR. TYSON, of Philadelphia, called attention to the exceeding rarity of the parasite. In his large practice, including a large dispensary practice, he met with about one worm a year. The tænia saginata is the most common form in this country, Dr. Leidy recently asserting that during the last fifteen years no other variety had been sent to him for classification. Dr. Tyson also spoke of the better success of quacks in the treatment of worms. He believed the reason to be that they treat enormous numbers of cases and give larger doses than the regular practitioner. With regard to the remedies employed, all are useful, provided there is proper preliminary treatment. It is most important that the previous purgation be decided. Kooso flowers have been very efficacious in his hands, given in one-ounce doses in water. Strüppel recommends pomegranate root mixed with ethereal extract of male fern as very valuable. Dr. Tyson has noticed that if two remedies are united they are more valuable.

DR. COOPER has had four cases of tapeworm in thirty-five years. He believes that the head of the worm is often imbedded in some pouch of the intestinal wall where the remedy cannot reach it, and hence the lack of success in treatment.

DR. EARLY has succeeded in dislodging worms by the employment of turpentine.

Adjourned.

WEDNESDAY, JUNE 3D.—SECOND DAY.

The meeting having been called to order at 9 A.M., the address on Mental Disorders was delivered by DR. SAMUEL AYRES, of Pittsburg, his subject being the "Gastro-intestinal Disorders, especially Catarrh and Hepatic Diseases, in their Relation to Insanity." He particularly enlarged upon some of the obscure causes of insanity, including the relationship existing between dyspepsia and melancholia. An unpleasant feeling in the body induces a corresponding feeling in the mind, and mental disorders are thus produced reflexly from physical indispositions. The alterations in the liver in these cases are chiefly those of chronic congestion. Catarrh is probably the chief cause of these changes, while in many cases there is a feature of heredity. As a result of this catarrh, noxious gases, especially sulphuretted hydrogen, distend the viscera, while ptomaines and microörganisms are generated. All of these, together with the leucomaines which are not properly eliminated, are absorbed. Toxæmia follows and is manifested by headache, vertigo, morbid thinking—the effects of the poisonous action upon the nervous system. Cathartics or diuretics generally avail to remove this condition, but let the toxæmia as well as the chronic congestion of the hepatic system continue, and failure of the emunctories to act, and nervous and mental disorders follow, often resulting in insanity and suicide. Acute mania and delirium may readily be explained on the hypothesis of infection from microbic action secondary to gastro-intestinal disorders. Prophylaxis is the leading indication in the treatment of this condition. The question of heredity must be considered, while special treatment of the catarrhal trouble should be instituted, especially associated with diaphoretic elimination of the putrefactive matter in the system.

DR. ISRAEL CLEAVER, of Reading, read an interesting paper on the "History of the Medical Profession in Berks County." He showed that Reading was the first place to welcome the present Association under the name of the Medical Society of Pennsylvania. Berks was the second organized county medical society in the State, Philadelphia alone antedating it. It has furnished two presidents to the State Medical Association, Dr. Easter, in 1836, and Dr. Wallace, in 1862. Thirty of its members served as surgeons in the Union army. It was organized with 22 members, and at present has 55 members. The profession is represented in the county by 289 regular, 42 sectarian, and 60 nondescript members. The record of disease shows some interesting facts. Malarial fever, formerly very prevalent in the county, gave place in the decade from 1850 to typhoid fever, which in turn disappeared during the last decade to make room for malaria again. The records of the County Society show reports of some extremely interesting cases, including a unique treatment of epistaxis by insufflations of charcoal from burnt cork.

"The Treatment of Subacute Pleuritis," was considered by Dr. J. M. ANDERS, of Philadelphia. He said that the therapeutics of the first stage of the disease embraced measures to limit the extent and diminish the intensity of the inflammation, and to remove the acuteness of the pain. If the temperature is high, and not associated with cachexia, veratrum viride and quinine are indicated. The effusion is the result of inflammatory action and not a mere transudation. So long as there is inflammation, as shown by the rise of temperature, there will be exudation, and the absorption of the latter begins with the defervescence of the temperature. To minimize the inflammation, an ointment of iodine ʒss, iodide of potassium gr. 15, and lanolin ʒj, should be rubbed into the side twice daily. Blisters and poultices should be eschewed. Owing to their depressing influence, antipyretics are injurious. Quinine, ten grains every two hours, should be administered. The removal of the effusion constitutes the other leading feature of the treatment, and this should be done only by the use of diuretics, such as the iodides of iron and potassium in combination, associated with a moderately dry diet. Diaphoretics are depressing, and purgatives are apt to be followed by alarming symptoms of collapse. Thoracentesis is indicated should the effusion persist a week after the defervescence of temperature. The amount withdrawn should not exceed one-half pint, but the tapping should be repeated every second day. During convalescence the strength of the patient should be stimulated by proper measures, the muscles toned up by the use of strychnine and electricity, with the sytematic use of the wall machine and parallel bars.

DR. TYSON prefers the employment of stronger counter-irritation in the form of blisters. In regard to paracentesis, the longer the lung is compressed the more difficult will it be for it to return to its normal condition, hence he favors early action, especially if pus be present. He

emphasized the value of lung gymnastics during convalescence.

DR. ROBERTS said that the danger in delay is mechanical. Early evacuation hastens the absorption of the fluid, and he operates irrespective of the temperature chart. He objects to the preliminary use of the hypodermatic needle, and to repeated tappings.

A paper on "Typhoid Fever" was read by DR. WILLIAM F. WAUGH, of Philadelphia, in which he laid stress upon the bacterial origin of the disease. As to therapeusis, he objected to all empirical management of the cases, and to the use of antipyretics in particular. Intestinal antisepsis is the only proper method of removing the cause of the disease. The good effect of the oil of turpentine is due largely to its antiseptic properties. The sulpho-carbolates, especially of zinc, are the most efficient of these intestinal antiseptics. He administers it in doses of two and a half grains every two hours until the stools are deodorized. The use of this drug is followed by an amelioration of all the symptoms, and the disease may even be aborted. In case of any complication it must be supported by the employment of other remedies.

CORRESPONDENCE.

ARTIFICIAL FEEDING.

To the Editor of THE MEDICAL NEWS,

SIR: The communication which I send herewith struck me as very interesting. I submit it to you for publication with the writer's permission. Very respectfully, BARTON COOKE HIRST.

DR. B. C. HIRST,

DEAR DOCTOR: Your article in THE MEDICAL NEWS of January 31st attracted my attention by its title. . . . This is a subject I have thought of and worked on for ten years, and as yet have not been able to arrive at any satisfactory solution to the problem. I wish, however, to give you the advantage of a little experience I gained in Japan, as, though in itself it may be of little value, still if added to some experience of another observer, it might come into use. I went to Japan in 1884 as medical officer to the American Episcopal Mission. One of the first things I noticed was the immense amount of condensed milk imported there, and what astonished me was that it was mostly of American manufacture—"Gail Borden's Eagle Brand." I next noticed only one other brand in the market—"The Anglo-Swiss Milk." On making inquiries I found out that most of the children of foreigners—*i. e.*, Europeans and Americans residing there—were fed almost entirely on condensed milk. You will wonder at this, but it is owing to the following facts: The monthly nurses are Chinese women, who, realizing the fact that children come oftener when the women can be persuaded to have their breasts dried up, of course endeavor to do this and thus make business for themselves; they usually succeed in persuading the mother to abandon her babe to artificial feeding.

The next fact is that, as there are few unmarried ladies there, the dictates of fashion require married women to do all the entertaining, and to fill the place of the unmarried woman in society. Of course, it will not do for a society mama to have a turgid breast that must be relieved, to say nothing of a hungry, crying babe at home that needs feeding every three hours. Pursuing my inquiries further I found that over ninety per cent. of the children of foreigners born in Japan were brought up on the bottle. Being a new-comer, I took it for granted that in a hot climate, artificial feeding must produce a great deal of intestinal trouble, and expected to see much of it, but this was not the fact. On making inquiries of the leading physicians of Yokohama, Tokyo, Nagasaki, and Kobe, I found that such a thing as a death from summer complaint, or from other intestinal trouble brought on by improper feeding, was utterly unknown. The reason for this could not be explained. True, many of the children had slight, and some even very severe troubles of digestion, yet there were no deaths. The usual mode of administering the milk was by the bottle or cup, extreme cleanliness being observed. The rule of washing the bottle in strong bicarbonate of sodium solution was invariably observed, many people using a simple feeding-cup with a nipple on the spout, as it was easier to clean and required the child to be held each time it was fed, and of course was not so hard to draw from as the usual nursing bottle, because of its being open. Lime-water is usually used with the condensed milk. "The Eagle Brand" was noticed to be more constipating than the "Anglo-Swiss," but was less apt to be rejected by a delicate stomach. Ordinary cow's milk was used when a child was constipated, and after using the condensed milks it, in fact, acted as a laxative. Nestlé's food was used to a certain extent with older children, but the condensed milks were generally used for the first six months. The physicians disregarded the directions on the cans entirely, as the proportions given were much too strong. The children there are exceptionally strong and robust-looking. Such rosy cheeks and bright eyes were good to see. Of course, there is one factor to be considered; these children had parents who were picked for their strength. All of the mercantile and missionary corporations *require* a man to stand a good physical examination before he is allowed to go to Japan. The missionary societies require a certificate of robust health from the wives of their agents. Again, these people are all well-to-do. There is no foreign laboring class in Japan. The foreigners there are all either professional men or merchants and their clerks.

I remained in Japan six years, and was during that time in general and hospital practice, and in my own experience knew of no deaths from intestinal troubles among infants, though there were three epidemics of Asiatic cholera during that time. Dr. Duane B. Simonds, who had been a practitioner in Japan for twenty-six years, told me that he had never known of a death from artificial feeding. While children are exceptionally healthy there, adults are the reverse. Nervous troubles are particularly frequent. Wet-nursing was not much practised on account of the fear of syphilis, leprosy, tuberculosis and skin diseases. Parasitic diseases of all kinds are frequent among the lower classes of the natives. Filaria—distoma hepat. and pulmonal.—and guinea-worm are met with in Japan, and on account of the extensive use of human fæces as manure,

the round-worm is a usual habitant of the average intestinal tract. Yours very truly,

FRANK W. HARRELL, M.D.

SEATTLE, WASH., March 18, 1891.

CONCERNING A TWO-YEAR MEDICAL COURSE OF STUDY.

To the Editor of THE MEDICAL NEWS,

SIR: The last issue of your journal contains a remarkable plea for two years of undergraduate medical study as being more just and fair, and more effective in their results, than a three-years course. Dr. Young J. Bond, of St. Louis, in a truly disinterested manner, champions the cause of the brilliant but impecunious young man, and dwells upon the hardships three years compulsory attendance would inflict upon such a student. In conclusion, the writer favors the appointment of a State Board of Examiners.

As has been stated in a recent issue of your journal by Dr. C. A. Todd, of St. Louis, the physicians all over the State favored the passage of the bill on medical education before the last Legislature. The principal object of this bill was the raising of the standard of medical education, and the three-course requirement was one of the features of this bill. It was urged that inasmuch as similar laws had been passed in surrounding States, the enactment of this law would become necessary in order to protect our State from the influx of incompetent physicians from those surrounding States. The bill passed the House, by a large majority, but the persuasive powers of the tongue (or the pocket-book?) of these disinterested champions of the brilliant but impecunious young man were responsible for its defeat in the Senate.

The fact that the brilliant young man is eminently well qualified to take care of himself seems to have been entirely lost sight of; as also the circumstance that the public in general is much more in need of protection against incompetent and ignorant physicians than the brilliant young man is in need of protection against the possibility of learning too much. It is reasonable to suppose that any young man can learn more in three years than he possibly could in two years, and no one can deny that even more than a three-years' careful study is needed for the acquirement of a thorough education in the different branches of medicine and surgery. I am persuaded that even the brilliant young man, with profit and benefit to himself and his future patients, can utilize three years in the study of the medical sciences. The physicians of this State are almost unanimously in favor of any measure that will insure every student a thorough qualification for his important life-work. If a State Board of Examiners will accomplish this end, we will certainly favor and urge the appointment of such a board. But it would seem that inasmuch as the members of such a board are appointed by the Governor, political influence might at times insure bad appointments, and in this manner even a State Board of Examiners might not prove an unmixed good.

The bill referred to was a step in the right direction, a step toward the securing of a State Board of Examiners, or any other measure having for its ultimate result the elevation of the standard of medical education, and those opposing it may proudly claim the questionable honor of having secured the defeat of the bill. H. H. V.

ST. CHARLES, MO., May 25, 1891.

FEL BOVIS.

To the Editor of THE MEDICAL NEWS,

SIR: In answer to the many inquiries which I have received as to the time of administering, and the preparation of "fel bovis" used, will you kindly grant me space in your columns to say: As a rule, the "fel bovis inspissatum" yields the best results in digestive disorders when given before each meal. As an antipyretic it should be administered every two or three hours. As to the preparation, great care should be taken to secure a fresh sample from any of the well-known manufacturers. The old and often decomposed "fel bovis" of the shops will prove a total failure, as has often happened to my patients. But when a fresh and undecomposed article was used, it has never failed to produce the desired result. "Fel bovis inspissatum," when in good condition, has a semi-solid consistency, and will rub up with glycerin into a smooth paste without frothing, but when altered by age, or impure in quality, this result cannot be obtained. WILLIAM HENRY PORTER, M.D.

OBITUARY.

DEATH OF FORDYCE BARKER.

ON last Saturday afternoon, May 30th, DR. FORDYCE BARKER died at his home in New York City, after a brief illness, his age being seventy-three years.

The death of this eminent member of the American profession calls for more than a brief notice. A native of Maine, and a graduate in Arts of Bowdoin College, his medical studies were pursued in Boston, Edinburgh and Paris; he received his degree in the city last named. He was made Professor of Midwifery in Bowdoin eight years after receiving his literary degree, holding this position until his removal to New York many years ago. For more than thirty years he was a medical teacher in the city of his adoption, occupying the chair of Clinical Midwifery and Diseases of Women in Bellevue Hospital College. He was an active participant in the meetings of various medical societies, and a diligent contributor to medical literature. The work upon which his fame chiefly rests, and which made him most widely known, both at home and abroad, is his volume upon *Puerperal Diseases*, published in 1874. It was his intention to collect some of his many fugitive contributions to medical literature, carefully revise them, and then have them issued in a single volume—indeed, a good deal of work had been done in the preparation of this proposed volume, which was to have been published by a well-known Philadelphia house, and the writer of this sketch had promised the distinguished author to exercise some supervision in its publication. It is cause of great regret that Dr. Barker died with this purpose unaccomplished.

As a practitioner in obstetrics, as a teacher of his favorite department of medicine, and as a writer, he had no superior upon the continent—hardly an equal in any,

certainly not in all of these functions. His authority in obstetrics scarcely anyone would be bold enough to challenge, and, in the main, his teaching was true and wise; in a very few things he was slow to fully accept recent views, clinging with great tenacity to some old theory or hypothesis, as, for example, that puerperal fever was in some cases an essential disease.

Dr. Barker's kindness to the younger members of the profession, generously giving a helping hand to the worthy who were struggling up the slippery steps to firm position, must be reckoned as one of his marked characteristics. His earnest and zealous efforts for professional advancement were well known and usually successful. His social and professional relations with many of the wealthiest citizens of New York enabled him to awaken warm interest in, and secure generous contributions for, different objects of professional concern and for important charities. His loyalty to his friends was generally known. His generous hospitality was proverbial; he was a perfect host, seeing that no guest was unnoticed or uncared for. His conversation was not only instructive, but delightful. No one could listen to his words upon professional subjects, whether uttered at his home or in societies, without becoming wiser for his wisdom, and deriving practical lessons for his daily work. Probably Dr. Barker's most valuable contributions to professional knowledge, independently of his medical teaching, were made in the New York Academy of Medicine and in the American Gynecological Society, of which he was one of the founders and the first president. For many years he suffered from a laryngeal disorder, certainly for thirty years, over which the writer's acquaintance with him extended, and utterance was difficult and only understood when most carefully listened to; but wherever he spoke, whether in societies, at home or abroad, every hearer gave strict and constant attention, and felt abundantly rewarded. His abilities and his work brought him great recompense, not merely in a most lucrative practice, but more and higher, in fame and honors. Among the latter must be mentioned his having the degree of LL.D. twice conferred upon him by British universities, the last time by that of Glasgow.

We may murmuringly ask why a man, so great and good, capable of doing such great and good things for his profession, might not, with eye undimmed, natural strength unabated, and in the vigor of his intellectual powers, have been spared a little longer to continue his noble work. Nay, rather let us rejoice that such a man has lived and labored, bringing honor to medicine and glory to the American profession. But he did not belong exclusively to this country, for no American physician had greater European fame. How often one of the first questions asked of a doctor from the United States, when he was in Great Britain or on the Continent upon his summer vacation, was, "Is Barker coming over?" Loved by friends who knew him best, admired and honored by all, at home and abroad, he rests from his labors, but his memory and fame live, and will live, probably longer than those of any other American obstetrician of this or of any other century.

The funeral services, on Tuesday afternoon, June 2d, in the Episcopal church of St. Thomas, of which the deceased had for many years been a member, were conducted by Bishop Potter and Rev. Dr. Morgan Dix, and were impressive. The auditorium was filled with representatives of the medical, legal, and clerical professions, as well as of the social, the commercial, and the industrial life of the city of New York; physicians of Philadelphia, Boston, and New Jersey were also present. The remains were taken to Norwich, Conn., for burial in the cemetery in which Dr. Barker's father and his daughter, who died in childhood, were interred. Dr. Barker's wife and son, Fordyce Barker, are the only members of the family living.

DEATH OF DR. JAMES W. WHITE.

ON Wednesday, May 27th, DR. JAMES W. WHITE, long known to Philadelphians as a philanthropist and successful business man, died suddenly of cardiac disease. During the war Dr. White was an active member of the Sanitary Commission, and since then has been constantly engaged in charitable and beneficent pursuits. His connection with the Maternity Hospital in this city consisted in more than the mere perfunctory position of manager, and his office of President of the Board of Charities gave him still further opportunities for the exercise of many kindly traits.

Firm in his opinions as to right and wrong, fearless in the discharge of every duty, kind to the young man and gracious to his colleagues, Dr. White leaves a blank in the city life which many must regret.

NEWS ITEMS.

Dr. Wyman—the Surgeon-General of the Marine-Hospital Service.—Dr. John B. Hamilton has resigned the position of Surgeon-General in the Marine-Hospital Service to accept the chair of Surgery in the Rush Medical College of Chicago. Dr. Walter Wyman, who had for a long time been the assistant to Dr. Hamilton, was, upon the recommendation of the latter, appointed by the President to fill the vacancy. Dr. Wyman is forty-two years old, a native of St. Louis, and a son of the late Edward Wyman, widely known as an instructor.

He graduated from Amherst College in 1870, and from the St. Louis Medical College in 1873. After serving for more than two years in the city hospitals of St. Louis and engaging in private practice, he was, in 1876, appointed Assistant Surgeon in the Marine-Hospital Service and placed in charge of the Marine Hospital at St. Louis.

In 1879 he was transferred to Cincinnati, and for three years remained in charge of the service there, temporarily acting as Surgeon of the U. S. revenue cutter "Chase" (cadet ship) on her annual cruise to Spain and the Azores in 1881.

In March, 1882, he was placed in charge of the Marine-Hospital Service at Baltimore, and in November he was detailed as Medical Inspector of the crews of the Life-saving Stations on the New Jersey coast.

Between December, 1884, and June, 1885, he visited the principal hospitals and laboratories of Europe and pursued studies in Vienna. On his return he was assigned to the command of the service at New York, remainining three and a half years, when he was ordered to Washington as Medical Purveyor and Chief of the quarantine division.

During the absence of the Surgeon-General in Europe last summer and fall, Dr Wyman was in temporary charge of the bureau. On the return of the Surgeon-General, an additional officer having been detailed at headquarters, Dr. Wyman was relieved of the purveying division, and assumed charge under the Surgeon-General of the National Quarantine Service and the publication of the *Weekly Abstract of Sanitary Reports.*

In the fall and winter of 1890, Dr. Wyman made an inspection of the quarantine stations of the Atlantic and Gulf coasts from the Delaware Breakwater to New Orleans, and visited Havana to familiarize himself with the local conditions of this perennial menace to the health of the United States.

Dr. Wyman is an active member of the American Public Health and American Medical Associations and was secretary of the Section of Public and International Hygiene in the International Medical Congress in Washington in 1887.

He is the author of a number of published papers on matters relating to public health, the most recent being an exhaustive article on "Quarantine" in *Rohe's Textbook of Hygiene.* Other articles are: "Hospital Records, with description of a New System;" "Hospital Management;" "River Exposure and its Effect upon the Lungs;" "Hygiene of Steamboats on Western Rivers;" "Hardships of the Chesapeake Bay Oystermen;" "System of Sewerage Disposal in Berlin;" "Treatment of Cholera by Paris Physicians in 1884;" "Government Aids to Public Health."

University of Pennsylvania.—The Trustees of the University of Pennsylvania have elected—Dr. George A. Peirsol, Professor of Anatomy; Dr. Harrison Allen, Professor of Comparative Anatomy; Dr. John B. Deaver, Assistant Professor of Applied Anatomy; and Dr. Edward Martin, Clinical Professor of Genito-urinary Surgery.

New York Post-Graduate Medical School and Hospital.—At a recent meeting of the Directors of the New York Post-Graduate Medical School and Hospital, H. J. Boldt, M.D., was made Professor of Diseases of Women; William James Morton, M.D., Professor of Electrotherapeutics, and Aug. Caillé, M.D., Professor of Diseases of Children.

Resolution on the Death of Dr. Fordyce Barker.—The Medical Board of the New York Maternity Hospital adopted the following resolution:

"*Resolved*, That by the death of Dr. Fordyce Barker, consulting surgeon to the hospital, we have met with the loss of a warm personal friend, as well as of a valued counsellor. Although unable, by reason of increasing infirmities, to take an active part in the work of the hospital, his interest in its welfare and in the branch of medicine in which he was so eminent never abated.

"In common with the whole profession we cherish his memory as that of a wise physician and a good man, who died full of years and honors."

The Medical Examiner.—This new journal was launched at New York City, April 1, 1891, as a proposed organ for medical men who are engaged in life insurance, accident assurance, prudential relief, pension matters, railway surgery, the army, the navy, and as police surgeons. It will appear monthly. Dr. George W. Wells will be its editor.

Long Island College Hospital.—The Long Island College Hospital has made the following interesting changes in the course of its instruction and in its faculty:

1. The regular course of lectures will hereafter be six months in duration.

2. Three courses of lectures will hereafter be required for graduation.

3. Joshua M. Van Cott., Jr., M.D., has been appointed Professor of Histology and Pathological Anatomy, *vice* Frank Ferguson, M.D., who has resigned.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM MAY 26 TO JUNE 1, 1891.

CARTER, EDWARD C., *Captain and Assistant Surgeon.*—Will proceed, without delay, to Fort Canby, Washington, and report to the commanding officer for temporary duty, relieving John D. Hall, Major and Surgeon, who will proceed to Fort Sherman, for duty as Post Surgeon.—Par. 1, *S. O. 74, Department of the Columbia*, May 22, 1891.

By direction of the Secretary of War, JEFFERSON R. KEAN, *Captain and Assistant Surgeon*, is assigned to temporary duty at Fort Myer, Va., until the return of Robert H. White, Major and Surgeon, to duty at that post.—Par. 8, *S. O. 122, A. G. O.*, May 28, 1891.

WATERS, WILLIAM E., *Major and Surgeon.*—Is granted leave of absence for twenty days.—Par. 6, *S. O. 122, A. G. O.*, May 28, 1891.

By direction of the Secretary of War, leave of absence for three months, on surgeon's certificate of disability, is granted MARLBOROUGH C. WYETH, *Captain and Assistant Surgeon.*—Par. 6, *S. O. 119, A. G. O., Washington*, May 25. 1891.

BROWN, PAUL R., *Captain and Assistant Surgeon.*—Is granted leave of absence for one month, with permission to apply for an extension of one month.—Par 4, *S O. 59, Department of the Missouri, St. Louis*, May 26, 1891.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE TWO WEEKS ENDING MAY 23, 1891.

VANSANT, JOHN, *Surgeon.*—Granted leave of absence for seven days, May 22, 1891.

IRWIN, FAIRFAX, *Surgeon.*—Granted leave of absence for twenty-one days, May 11, 1891.

GUITERAS, G. M., *Assistant Surgeon.*—Relieved from special duty at New York, N. Y.; ordered to San Francisco, Cal., May 11, 1891.

GROENEVELT, J. F., *Assistant Surgeon.*—Relieved from duty at New York Marine Hospital; ordered to Gulf Quarantine, May 22, 1891.

YOUNG, G. B., *Assistant Surgeon.*—Granted leave of absence for thirty days, May 11, 1891.

PROMOTIONS.

PERRY, T. B., *Passed Assistant Surgeon.*—Commissioned as such by the President, May 23, 1891.

WOODWARD, R. M., *Passed Assistant Surgeon.*—Commissioned as such by the President, May 23, 1891.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will upon publication be liberally paid for, or 250 reprints will be furnished instead of payment, provided that the request for reprints be noted by the author at the top of the manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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ORIGINAL ARTICLES.

LINEAR CRANIOTOMY FOR MICROCEPHALUS.

BY JOSEPH RANSOHOFF, M.D., F.R.C.S.,

PROFESSOR OF ANATOMY AND CLINICAL SURGERY, MEDICAL COLLEGE OF OHIO.

LESS than a year ago Lannelongue reported two cases in which, by the removal of a long strip from the cranium, he hoped to provide room for the cerebral development of microcephalic children. Whether the defective brain-growth is the result of early synostosis of the cranial sutures or the reverse obtains, the data for consideration are a small brain and a firmly closed capsule resisting what little impetus toward development the former might possess. To reduce this resistance by surgical procedure seems rational enough. The ingenious operation of Lannelongue aims to restore the firmly closed microcephalic head to the infantile conditions existing before closure of the fontanelles and obliteration of the sutures occurred. From a recent article by Dr. Keen (*American Journal of the Medical Sciences*, June, 1891) it would appear that six cases have been operated on. At the recent meeting of the French Surgical Congress M. Lannelongue reports upon twenty-five cases. Altogether, therefore, the cases are as yet sufficiently few in number to justify my recording the following one, which presents some points of unusual interest:

Emma S., aged three years and seven months; referred to me by Dr. Jenkins, of Newport, Ky. The parents were living and healthy, having six children, one of them an imbecile, aged sixteen years. The mother states that the little child's head "closed" soon after birth. To this fact she ascribed its backwardness in mental development. At the present time the child is well formed, healthy, of normal bodily development, and ruddy complexion. A glance reveals the relatively small size of the head and the almost incessant twitching of the ocular muscles. The patient is unable to walk or sit up, even if supported. When raised on a pillow the body rolls over to one or the other side. The child gives no evidence of knowing her mother and seems absolutely unconscious of persons or things about her. The brightest objects placed before her eyes do not attract her attention. The only sound of which she is cognizant is the click of the spoon against the porridge-bowl when food is brought to her bed. When she hears this she protrudes the tongue in efforts at suction. Swallowing is accomplished with some difficulty, some food being regurgitated. In the incoherent movements which from time to time the child makes it is evident that the left arm is very rarely used, and that in such movements as scratching or picking at the bedclothes the range of motion is greatly limited as compared with that of the right arm. Every hour or two during the twenty-four the ward in which the child is placed resounds with a short, sharp cry of the patient not unlike the *crie encéphalique* preceding an epileptic seizure.

The head is small and sugar-loafed—typically oxycephalic. The sagittal suture presents itself as a distinct solid ridge, with a well-defined groove on the right side. During the process of ossification the left had doubtless overlapped the right parietal bone. The measurements as taken by calipers are as follows: Bi-frontal diameter, 3 inches; bi-parietal, $4\frac{6}{8}$ inches; occipito-frontal, 6 inches; circumferential measurement between ears, $9\frac{1}{4}$ inches; between occipital protuberance and supra-orbital ridge, 10 inches.

The operation was performed on February 9th, the anæsthetic being chloroform. Aseptic preparations of the head were observed. Application of the flat Esmarch strap was made around the head to control hæmorrhage from the scalp. The incision was parallel with and one-half inch to the right of the sagittal suture, from the lambdoidal suture to within an inch of the orbital margin. The posterior and anterior extremities were curved outward. There was no hæmorrhage from the scalp. The flap, including the periosteum, having been removed sufficiently from the bone, a half-inch trephine was applied at the posterior end of the exposed cranium and a button removed. With rongeur forceps a strip three-eighths of an inch wide and five and one-half inches long was then cut from the skull. The alleged greater adherence of the dura in the undeveloped skull presented no obstacles, except where the frontal crossed the line of incision. It was only by the greatest care that the wounding of the dura at this point was obviated. The cleft in the bone was extended subcutaneously to within one-half inch of the orbit. Although there was considerable oozing, the hæmorrhage yielded readily to compression. A strip of the periosteum corresponding to the groove was next removed. Catgut drainage was next provided for, and the wound closed with the continuous catgut suture. The operation from the beginning of the anæsthesia to the end lasted forty minutes. A very considerable shock from loss of blood followed it. Within twenty-four hours there was recovery from this. The operation was not followed by an absolutely "normal" course of repair. There was some suppuration from the posterior end of the wound, probably from an imperfectly steril-

ized catgut strand. The temperature on the third and fourth days ran to 103° in the evening. Yet, with the exception of the posterior end of the wound, where a fistula continued for some months, the wound, long as it was, healed by primary union.

And now as to the result three and one-half months after the operation, before the patient's discharge from the hospital: The antero-posterior measurements show no change from those taken prior to the operation; the transverse measurements (calipers) are increased, the bi-parietal ¼ of an inch, and the bi-frontal nearly ⅜ of an inch; the binauricular measurement is 9¾ inches.

In mentality the child presents the intelligence of a child of six months. With its eyes it follows persons and objects moved before it. It reaches for a watch with either hand, the left having a power of coördination equal to that of the right. When a watch is placed beyond the visual field, as, *e. g.*, on the side of the pillow, either or both hands are used in searching for it. The patient amuses herself with a picture-book, and when tired of one picture she with some difficulty turns the page to look at the next. She recognizes her nurse and occasionally attracts her attention by tugging at her apron when her back is turned. Evidently reason is present, though in a very primitive state. The difficulty in deglutition has entirely disappeared. The *quasi* epileptic cry has ceased to annoy the other inmates of the ward. When the patient is supported on a pillow she will sit up for an hour at a time looking about, seemingly interested in her surroundings. The voluntary efforts which she makes to raise herself to the sitting posture are not as yet successful, although a little help is all she requires.

REMARKS.—The improvement already obtained in this case justifies the operation. If in six months there should appear an arrest in the development of mentality, a similar operation on the left side will be performed. The right side was first operated on because of the apparently limited usefulness of the left arm. If any part of the result thus far achieved may be designated as brilliant, it is in the freedom with which this member is now used by the patient.

The conditions of the microcephalous are so deplorable that any interference promising a shadow of success seems to me justifiable. That the danger to life is very great, I cannot believe. Of twenty-five cases operated on by Lannelongue, only one died of sepsis directly due to the operation, and two from croup, one or two months after operation. It is possible, though not probable, that the laryngeal spasms were of meningeal origin. Even if included with the fatal cases the death-rate would be only 12 per cent. In the article referred to, Keen reports six American operations, excluding two which were not really craniotomies. Of this number two were fatal—one from heart-failure and one from acute anæmia. I believe that the use of the Esmarch strap will largely tend to limit the fatality from either of these sources, since most of the hæmorrhage comes from the divided vessels of the scalp. The suggestions made by Wyeth to operate on both sides of the skull at one time, and also to forcibly separate the cranial vault from the underlying dura, do not commend themselves. The added shock and hæmorrhage would doubtless increase the immediate danger, and the intra-cranial pocketing of blood would add to the risk of sepsis.

THE PATHOLOGY AND TREATMENT OF CHRONIC OVARITIS.

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THE study of the pathology of ovaritis derives a special interest from the fact that the ovary differs from all other organs of the body in that its function is performed at the expense of a portion of its structure which is never restored to its original condition. The rupture of each Graafian vesicle in ovulation causes the destruction of the vesicle. Rudimentary vesicles mature and repeat the function of their predecessors and are in turn destroyed. Finally the supply ceases, and the ovary, worn out in structure, becomes functionally incompetent long before the general organization has reached the end of its life and activity. In all other organs of the body, function is effected through cellular disintegration and restoration. This peculiarity in the natural history of the ovary makes it difficult for the superficial observer to distinguish between physiological degeneration and the structural changes which result from chronic ovaritis. Experts also find it no easy matter to distinguish, by gross appearances, the atrophy of old age from the cirrhosis of inflammation.

In discussing the pathology of ovaritis I shall briefly point out some of the established facts which are of most interest in relation to the diagnosis and treatment of this affection, and omit everything which is ill-defined, uncertain and of little interest to surgeons. The pathology of ovaritis is characterized by changes of structure brought about chiefly by areolar hyperplasia first, then by atrophy of the normal tissues, and finally by a condition of cirrhosis. In this respect the morbid process and its products resemble degeneration rather than inflammation such as is observed in other organs. In the natural history of its pathology it is more like certain forms of chronic nephritis. Owing to these peculiar and distinguishing features, the affection has little in common with acute puerperal or non-puerperal ovaritis, or with secondary acute ovaritis due to peritonitis, and all such conditions will, therefore, be carefully excluded from the discussion of the subject in hand.

The first variation from the normal toward the

pathological is deranged innervation—the ovary, owing to its important office and intimate relations to the other organs, being peculiarly prone to reflex disturbances. These, though as a rule temporary, when oft-repeated and prolonged in duration induce changes in the circulation that impair nutrition and finally produce changes of structure. This ovarian hyperæmia, the first step in the process, may subside and complete recovery follow. Reliable evidence of this has been obtained: first by clinical observation of cases which gave all the signs and symptoms of ovarian congestion, and which, under careful management, completely recovered; secondly, by inspection after laparotomy. I have not infrequently found a prolapsed, tender and painful ovary which, upon inspection, after opening the abdomen, was markedly hyperæmic, but presented no apparent change of structure except œdema. After fixing it in place by stitching the utero-ovarian ligament to the upper border of the broad ligament, the signs and symptoms have all subsided. The continuation of the hyperæmia slowly produces those structural changes which are invariably effected by prolonged malnutrition. The first noticeable changes take place in the blood-vessels themselves. These become dilated and a peculiar degeneration of their walls occurs. These changes have been elaborately studied by Dr. E. Noeggerath, who advanced the idea that they were closely related to the genesis of ovarian cystomata. This may be true in certain cases, but the changes more frequently end in hyperplasia of the stroma, which gradually goes on and in time crowds out all the normal structural elements of the ovary. Finally, a true cirrhosis is produced. With these changes in the bloodvessels the circulation is interrupted to a degree that causes œdema, which increases the size of the ovary and renders it softer. Apoplexies sometimes occur, and occasionally one or more of the blood-clots may be seen near the surface. These conditions can be distinguished from a diseased vesicle by the staining of the tissues around the clot. This last-mentioned lesion occurs in the early stage of ovaritis, and becomes less common as the process of hyperplasia proceeds to complete cirrhosis. These changes explain some of the important facts in the clinical history. The ovary which is found enlarged, softened, and tender to the touch will months afterward appear subnormal in size. Likewise the same lesions may be recognized upon inspection after laparotomy, if by previous study one has become familiar with them. While hyperplasia of the stroma is going on, the follicular elements undergo certain changes. The contents of the follicles become cloudy from degeneration of the epithelial elements. The gross appearance of the ovary at this time would lead one to suppose that there were a number of vesicles approaching maturity, but the uncommon number of these distended vesicles is evidence that they are abnormal.

The full value of a knowledge of the gross pathology of ovaritis can be fully estimated by those who have mistaken the physiological for a pathological degeneration of the ovaries, and have removed them, to learn subsequently, through the microscopist, that they were not diseased. I well remember hearing an interesting discussion regarding cases in which one ovary has to be removed for advanced disease. The question was: Should the other ovary be left, or removed, if there is no positive evidence of its being diseased? Much was said pro and con, but not a word was uttered about how to detect pathological changes which should decide the matter. The morbid appearances which aid the surgeon in deciding when to remove an ovary and when not to remove it are as follows: Follicles which, from their size, number and dark color are evidently diseased should be removed. Enlargement, congestion, and softening from œdema, and patches of induration with irregular distention of the vessels and the evidence of small blood-clots, as described above, are conditions indicating removal. Cirrhosis, indicated by subnormal size, induration and rough surface, when found in a young subject, can be easily passed upon; but in a subject near or after menopause this appearance of the ovary does not decide with certainty whether there is cirrhosis or simply senile atrophic degeneration. I have thus briefly described this part of the subject, introducing only such facts as I have obtained from observation, and which have appeared to be of possible use in guiding the surgeon. This brevity arises in part from my limited knowledge, but mostly from the hope of raising a discussion which will doubtless bring out much that we need to know.

Much might be said about the influence of chronic ovaritis upon the functions of the sexual organs and the nutritive and nervous systems, but time will only permit me to say that menstruation is often deranged and in various ways. Dysmenorrhœa is often present; in some the menses are retarded and scanty; in others too frequent and profuse. When the latter condition exists, the ovaritis is more easily controlled than in patients having a scanty flow. The effect upon the nervous system is peculiar and marked, depression and irritability being usually pronounced. The hystero-epilepsy which has attracted much attention from the neurologists is really an epileptiform affection, due, in all cases that I have seen in my own practice, to ovarian disease. Ovaritis also ranks first among all diseases of the sexual organs in the causation of mental disorders.

The causation of chronic ovaritis demands a brief

notice, owing to its intimate relation to the question of treatment. According to my observations, the cause which most frequently obtains is imperfect menstruation. When the uterus is undersized or flexed forward or backward, and the menstrual flow scanty and attended with pain, the ovaries are liable to take on chronic inflammation. This is far more liable to occur if in this class of subjects the sexual function is perverted. Specific causes, such as those producing the eruptive fevers, are said to affect the ovaries, and I believe that acute ovaritis is more liable to occur under these circumstances. It is probably true, also, that gonorrhœa causes acute rather than chronic ovaritis. The strumous diathesis (which I understand to be that condition of organization which invites tuberculosis) predisposes to chronic ovaritis, and inherited or acquired syphilis does likewise. Much has been written about endometritis as a cause of ovaritis upon the ground that the structures of the endometrium and ovaries have a common embryonic genesis, and the fact that the two diseases are often found together, but this is still an open question.

In regard to the diagnosis of chronic ovaritis I refer all interested to the able paper on the subject by my esteemed friend, Dr. Howard A. Kelly, in the *American Journal of Obstetrics* for February, 1891.

TREATMENT.—The advancement of abdominal and pelvic surgery in recent times has led to the removal of the ovaries as the most prompt and effectual treatment of chronic ovaritis. There are reasons for this upon theoretical grounds: the ovary is causing much suffering; there is a likelihood that it will be a long and tedious trouble, and this is especially true if general treatment has failed; the ovaries are not necessary to existence and can be removed with safety; it is according to the rules of surgery to remove any organ, or other portion of the body, that one can live without, in case a disease of the part tends to take life or cause unlimited suffering and invalidism; hence, from this way of looking at the matter, the ovaries should be removed. It is true (and the facts have been proved almost sufficiently) that chronic ovaritis does not end fatally, and is self-limited, though often of long duration. The removal of the ovaries is not free from all danger, though all cases properly operated upon have recovered, and the operation may not in all cases give complete relief. In fact, many of the cases are not much, if at all, improved; even those who are nearing the menopause and who bear the loss of the ovaries better than younger subjects, occasionally suffer much from those nervous disturbances which follow an abrupt menopause, and have to endure pelvic pain in the region of the stumps. The clinical history of cases in which the ovaries have been removed does not, in all cases, show great advantage over those in which the ovaries are left to complete the natural history of the disease. Younger subjects do not bear the loss of their ovaries agreeably. Some become fat, indolent, inefficient and subject to headaches. Others are irritable, dyspeptic and despondent, while but few enjoy general good health and mental vigor. This statement is contrary to much of the published literature, but is closer to the actual facts. The cases cured are those operated on when near the menopause; those improved are generally such as have suffered from complicating affections—for example, dysmenorrhœa; while the unimproved are the younger subjects in whom the disease was uncomplicated. The objections to surgical treatment apply to the removal of both ovaries. In cases in which one ovary alone is affected, and especially when there is prolapsus of the affected ovary and retro-displacement of the uterus, ovariotomy is perfectly satisfactory. The removal of the diseased ovary gives relief and the retro-displaced uterus can be restored, while the remaining ovary performs its functions, and the general health of the patient is preserved. I desire to be understood as advocating the removal of the ovary only when there are structural changes from inflammation and prolapsus at the same time. Prolapsus can be relieved by fixing the ovary to the upper border of the broad ligament, and the welfare of the patient can thus be better conserved. From advocating conservative measures in regard to abdominal and pelvic surgery it may be inferred that I am behind the age in experience, but I have had a large field for operative surgery and have acted to the fullest extent that I considered justifiable and according to my judgment. In fact I have in the past violated the rules I now advocate, but I have not been satisfied to have my patients simply survive the operations. I require that they be cured, and failures in this regard have, I trust, led to a rational conservatism. I have no word of condemnation for those who have removed and are still removing ovaries for the relief of chronic ovaritis. Their work, while not always beneficial, has been of vast interest to science. Their doings help to perfect surgery. The rough, unsightly scaffoldings employed by builders are temporary necessities which are all cleared away when the structure is perfected and completed. In like manner the heroic, daring experiments of the surgeon are valuable stepping-stones which lead to mature science and art.

The indications for general treatment are to lessen the blood-supply and relieve pain by correcting the deranged innervation. This, in the early stages, demands rest in the recumbent position. At the same time general exercise should be advised either by massage or by gymnastics in the re-

clining position. I specially desire to commend systematic calisthenics in the recumbent position as a most valuable aid in improving or maintaining the general health in many diseases of the pelvic organs which require rest as an important part of the treatment. The condition of the digestive organs should be carefully watched. The poor appetite, coated tongue and constipation, or the capricious appetite, flatulence, and occasional diarrhœa can be relieved by a number of small doses of mercury and a laxative. The saline laxatives are the best when they act without causing flatulence. The use of Saratoga waters often gives good results by improving digestion and keeping the portal circulation active. In keeping up a free elimination by the bowels and kidneys much benefit is obtained. This applies to cases that are apparently debilitated. Many times I have taken cases away from tonics, stimulants and forced feeding, and given saline laxatives, with the effect of increasing the patient's strength. To relieve the pain and lessen the hyperæmia, the bromide of sodium and fluid extract of hydrastis canadensis are by far the most potential agents that I have found; they are given in combination and in doses sufficient to produce the desired effect—twenty to thirty grains of the bromide and ten to twenty minims of the hydrastis, three times a day, until the physiological effects of the bromide are noticed in a mild degree. If the hydrastis in such doses is given alone it sometimes causes pelvic pain of a dull character, but when combined with the bromide it has no such effect. These agents are most efficacious in the beginning of the attack, and hence they should be discontinued as soon as the pain is, in a marked degree, relieved. Should the pain and tenderness return at the succeeding menstrual periods, the bromide and hydrastis should be resumed. In some cases much larger doses of bromide are required, and in others it fails altogether to relieve pain. Then it is necessary to employ other agents, especially during menstruation. Ten grains of salicylate of sodium and five of antipyrine, given between meals and in the night when the stomach is empty, answer for some; others, more especially those markedly debilitated, do better on full doses of aromatic spirits of ammonia, camphor, and chloric ether, with small doses of cannabis indica. This combination is best suited to those who get relief from gin or whiskey, but it is to be preferred, because alcoholic stimulants, though they may give temporary relief, ultimately do harm. Direct or local treatment should be adapted to the social state of the patient, and the presence or absence of complications, such as endometritis. In the unmarried, local treatment is often injurious. In fact, in such cases it is better to avoid any examination of the pelvic organs if the history is sufficiently clear to enable one to make a diagnosis with reasonable certainty. Hot sitz-baths, counter-irritation and hot vaginal douches, the latter to be given by a competent nurse, comprise about all that I employ in the way of direct treatment. The vaginal douche should not be continued unless it is decidedly sedative in its effects.

In married women (and in those who are married in all but the name) local treatment is more valuable. The treatment of any disease or displacement of the uterus that coexists should be managed in the usual way, and such local applications should be used as may aid in relieving the tender and hyperæmic ovaries. I employ a small tampon or pledget of cotton or wool saturated with equal parts of tincture of belladonna and glycerin, applied behind the cervix uteri, and permitted to remain forty-eight hours, and after its removal a hot douche. These are continued during the first days of treatment. The effect is to support or steady the ovaries while the sedative effect of the belladonna and the depleting effect of the glycerin are obtained. This I have followed with applications of tincture of iodine after the manner of Dr. Emmet. Recently I have with good effect used the sulph-ichthyolate of ammonium, five parts in ninety-five of glycerin, applied in the same way as the belladonna and glycerin.

The general and local treatment thus briefly outlined gives relief to the more pronounced symptoms. The pain becomes less, and also the tenderness. The general health improves and the pelvic congestion subsides. This is apparent in the color of the mucous membrane, the improved menstrual functions and diminished leucorrhœa. The local treatment may then be employed at longer intervals or suspended altogether. The constitutional treatment should now be modified. Tonics and laxatives may still be required, but alteratives are also indicated. Iodine and mercury are the chief agents. They act upon the ovaries as they do upon all glandular organs, and modify or arrest the morbid histological changes which take place slowly. Small doses of bichloride of mercury, with chloride of iron, when iron is indicated, followed by syrup of the iodide of iron, in doses as large as can be borne, may be administered. These can only be used when the bromides are given up. When giving these alteratives the patient often misses the bromides used to give sleep. Sulphonal, at such times, is of great value. In fact it is the most potent sedative, that is at the same time free from unfavorable ultimate or after-effects, that we have in gynecological practice. When a sedative is required while iodide of mercury is being used, I find that ten grains of salicylate of sodium and five grains of antipyrine, given three times a day, an hour before meals, give much relief,

especially in those who suffer from nervous dyspepsia and flatulence.

One important element in the treatment is that of patience and careful watching. Improvement comes, and the patient or the physician gives up treatment and there is danger of relapse. The poor in hospitals often suffer for want of time for prolonged treatment, and this often tempts the surgeon to seek more prompt relief by removal of the ovaries. This does not apply with the same force to those who have time and means to secure the needed care.

THE TECHNIQUE OF PELVIC SURGERY.[1]

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THE advancement made in the science and art of surgery during the past few years by the great principles of asepsis and antisepsis, has brought about a revolution in our ideas and methods, positive in its results. The "exploratory incision"—the natural outgrowth of these principles—has placed in the hands of the surgeon the means of making a diagnosis in a large number of cases that were previously improperly diagnosticated and treated. This method has rendered possible and suggested operations hitherto never thought of, and, being absolutely safe in the hands of the careful surgeon, it has placed the surgery of to-day in a position of comparative certainty, and raised its principles almost to the level of an exact science. The genius of Lawson Tait marked an era in the history of our art when it gave to the profession those principles which have placed the surgery of the female pelvis upon its present sound basis. His mind and masterhand are clearly seen in the results, whereby countless women have been and will be restored to health and usefulness.

It is my purpose in this paper to consider the technique of pelvic surgery, limiting myself, however, to the practical side of the subject. I shall rely entirely upon my own experience for the selection of such points in the detail of pelvic work upon which I believe success depends.

First, then, let us consider the necessary preparation of a patient about to undergo an abdominal section. If possible, we should have at least twenty-four hours in which to regulate the excretions and secretions, and to properly cleanse the skin. Furthermore, the patient should remain in bed for a day prior to the operation, as, under these circumstances, she will be less restless and nervous subsequently. The hair should be shaved from the pubes, and a general bath of hot water with soap given; care being taken to see that the abdomen, external organs of generation, and the vagina are thoroughly cleansed. A flesh-brush should be used in washing the abdomen, to get rid of all exfoliated epithelium and sebaceous matter. The umbilicus is to be most carefully cleansed, as septic matter is likely to remain between the folds of skin. After the bath, the external organs of generation and the abdomen are made antiseptic with a 1 to 1000 bichloride solution. A thick layer of bichloride gauze is then placed over the site of operation and surrounding parts, and held in position with a bandage until it is removed at the time of operation. It is my custom to thoroughly "salt" my patients. I order a tablespoonful of a saturated solution of the sulphate of magnesia to be given every hour, until six free movements from the bowels are produced; if the stomach be irritable, I reduce this dose to a teaspoonful every half-hour. About six hours before the time fixed for operating, I order an enema to be given, composed of a tablespoonful of the sulphate of magnesia in a pint of warm water. Too much stress cannot be placed upon the necessity of thus caring for the condition of the bowels, if the surgeon hopes to obtain good results. By thoroughly cleaning out the alimentary tract there is less tendency to subsequent tympany or to paralysis of the intestines, and should sepsis develop, the chances of recovery are greatly increased. The diet should be nutritious, easily digestible, and give rise to the smallest quantity of waste material. The importance of having a properly prepared room in which to perform abdominal sections is, I believe, exaggerated. I do not mean to undervalue the advantages of properly conducted and arranged hospital wards and rooms, but when we take into consideration the brilliant results of "alley work," where the environments are all of the most septic character, and the fact that a great number of operations are now done in amphitheatres, before large classes of students, many of whom are just from the dissecting-room, we are forced to place less importance upon our surroundings.

After the patient is placed upon the operating table, the lower extremities are wrapped in a woollen blanket, which should reach to the level of the great trochanters upon the sides and to the lower margin of the mons veneris in front. The upper extremities are kept out of the way by flexing the forearm upon the arm and securing the wristband of the nightgown to the shoulder of the garment by means of safety-pins. A blanket is then placed over the chest to protect that portion of the body from exposure during the operation. The parts surrounding the field of operation are covered with dry bichloride towels. The instruments, sponges and ligatures must be thoroughly aseptic. Every surgeon has his

[1] Read before the Northern Medical Association of Philadelphia, April 10, 1891.

own method of accomplishing this, and the special means employed are of no importance so long as the result is obtained. In making the hands and forearms aseptic the operator and assistant must use the greatest care. The finger-nails should always be kept short and well cleaned. I first wash my arms and forearms for five minutes in hot water and soap, using at the same time a stiff nail-brush. They are then soaked in a 1 to 1000 solution of bichloride for one minute, after which I immerse them in pure alcohol. The operator should see that his assistant and the nurse, who looks after the sponges, etc., have their hands and forearms thoroughly aseptic. A surgeon cannot be too careful in all matters that pertain to clean work. Every point of detail must be conscientiously looked after, and he must be fully imbued with the spirit of the principles of asepsis if good results are to be obtained. No pelvic case can die of sepsis, except when pus or fæcal extravasations have entered the abdominal cavity through some neglect of the operator. The surgeon should not delude himself, as many do, with the idea that all precautions were taken, if his patient, under these circumstances, dies of blood-poisoning. The fault is his; he is responsible for the death, and the burden of responsibility must rest heavily upon his conscience, unless he learns from his failures and endeavors by all possible precautions to guard against a subsequent like result. I speak feelingly upon this subject because I have seen so many lives sacrificed that could have been saved if it were not for dirt. Some power should stay the hand of the surgeon who does not grasp with all the powers of his mind the principles of asepsis.

It is now generally held by surgeons that the incision through the abdominal wall should be as small as is consistent with the necessary manipulations. Certainly, the dangers of a subsequent ventral hernia are lessened when we make use of a small opening. An incision of two inches is sufficient in most cases in which the abdomen is opened for pelvic disease. Those who make long incisions disregard the fact that touch, not sight, is employed in pelvic work; the surgeon must, therefore, train his finger—not his eye. Again, a long incision is a great disadvantage, because it allows the intestines and omentum to escape, thus interfering with the rapidity of work, and possibly the success of the operation. The ligation of the pedicle in the removal of diseased appendages is of the utmost importance. The appendages should be ligated and cut off close to the uterine cornua. A failure to do this often necessitates a secondary operation for the removal of the stump. Given a case of pyosalpinx, of what earthly good will an operation be if the entire diseased mass is not removed? And yet I have repeatedly seen surgeons contented in simply delivering such a mass and throwing a ligature around it without the slightest reference to the amount of diseased tissue included. There can only be one result of such careless and ignorant surgery, namely, failure. There will be no improvement after the operation, and the diseased stump must subsequently be removed by a more experienced surgeon. Always do clean work in the pelvis, should be the key-note to all successful surgery in that region of the body. In tying the pedicle I use No. 5 Chinese silk. It is sufficiently strong and at the same time not too heavy. A very thick ligature is liable to cause irritation, and in some cases to produce sinuses. The ends of the ligature should be cut off close to the knot, otherwise they will interfere with the process of repair at the site of the stump. The figure-of-8 knot is safe and secure; therefore I always use it in preference to others. The Staffordshire knot I mention only to condemn; it is unsafe and should not be employed, as secondary hæmorrhage is liable to follow its use. I use irrigation in those cases in which there are adhesions, or when pus or fæcal extravasations have been poured into the abdominal cavity. Irrigation must always be thorough and complete. My apparatus, which holds nearly a gallon, has attached to it a tube with a diameter of half an inch. This gives me a strong and full stream of water, which thoroughly floods and washes out the abdominal cavity. It is utterly impossible to irrigate properly with an ordinary fountain-syringe; and yet I have seen surgeons use such a contrivance, fully believing their technique to be above criticism. Washingout the abdominal cavity after a section is one of the most important of details, and success depends, in a large measure, upon its thorough employment.

The question of drainage has in the past, as well as at the present time, engaged the attention of surgeons; there being many different views upon the value of its frequent or its infrequent use. For my part I am draining less and less. Cases that one year ago I would not have dreamed of closing without drainage I now close without hesitation, and they make prompt and good recoveries. In pus cases I always employ drainage if the abscess contents have escaped into the abdominal cavity. There are some forms of pus which seem to have no injurious effect upon the peritoneum, and yet, again, there are other forms most virulent in their action. As it is impossible to say in a given case what the character of the pus may be, I keep on the safe side and drain. One word in reference to closing the abdominal wound: To guard against ventral hernia I use four sutures to every inch, taking the precaution to include in the stitches the sheath of the rectus muscle. In some of my late cases I have adopted the plan of stitching the aponeurosis separately before tying the deep sutures, which in-

clude all the tissues. I shall use this method in the future, believing that I may thus very greatly reduce the dangers of hernia. The integrity of the abdominal wall depends upon the aponeurosis, and unless it be properly united a hernia is almost certain to result. As to the after-treatment in cases in which drainage has been employed, the greatest care should be used to guard against septic infection through the tube. The syringe is to be kept in a solution of soda when not in use, and, just before using, boiling water is employed to render it aseptic. In passing the nozzle of the syringe down to the bottom of the tube, the first must not come in contact with the opening or side of the tube, since, unless this precaution be taken, there is always danger of infection.

The question of diet and drink following section is of very great importance. I never allow anything to be taken by the mouth as long as there is any irritability of the stomach remaining from the anæsthetic. Should the patient complain of thirst, from four to six ounces of warm water are given per rectum and repeated as often as it is necessary. I begin to allow fluids by the mouth generally in from twelve to twenty-four hours after the operation. I most earnestly condemn the use of anything given by the mouth to arrest the irritability of the stomach following abdominal section. What nature needs is rest, and the irrational plan of flooding the organ with all sorts of remedies only serves to make worse the condition already existing. No food is given for twenty-four hours following the operation, at which time, if the stomach be quiet, I allow the patient to have liquid diet. I am very partial to koumyss, as it is liked and agrees with most cases; any light broth may, however, be given. Milk should not be taken unless peptonized, as it is very apt to give rise to the formation of gas in the intestines. As a drink, a siphon of soda-water is very agreeable to patients, and I always order it for that purpose. I allow no solid food to be given until the bowels are moved; after which, I allow my patients anything they may desire, provided it is not in itself liable to disorder digestion.

My experience has led me to believe in the advantages of early emptying the alimentary canal. To accomplish this I begin the use of salts twenty-four hours after section, if the stomach be quiet. In cases in which the stomach is unable to bear the salts I employ calomel in quarter-grain doses every half-hour. The importance of emptying the bowels as soon as possible after section is often overlooked. In cases in which we have pus or fæcal extravasations, early evacuation of the bowels, as a prophylactic measure against sepsis, is of the greatest value. In ordinary cases, also, adhesions between loops of intestines or between the gut and the pedicle stump are much less likely to occur if the bowels are kept in an active state; and finally, my experience has taught me that all patients make a more rapid and satisfactory recovery if the bowels be emptied early.

I use silkworm gut for suturing the abdomen. It is readily made aseptic, is easier to tie, and is less irritating than any other material I have employed. One of the objections which have been urged against this suture is that it is stiff and hard to tie. This is true unless the gut is properly softened before being used. It should be put in boiling water before the operation, and when used it will be found soft and pliable. It is, however, liable to become rotten if placed in boiling water several times. I therefore prepare only what I require for an operation, and if any is left over I throw it away. It is my practice to remove the stitches in the abdominal wall at the end of the first week. By that time they are no longer of use, and furthermore, I find that unless they are removed at that time, the patients complain of a stinging sensation in the wound, which is at once relieved upon their removal. After the removal of the abdominal sutures I support the incision with a single strip of adhesive plaster, placing directly over the wound a piece of lint to keep it from being irritated.

While the patient is in bed, and especially after she is up and about, she should wear a properly fitting bandage. This should be made of Canton flannel, and cut so that it will fit closely to the figure, being held securely by straps. I always instruct my patients to wear this supporter for one year. A bandage cannot ordinarily maintain in apposition the lips of the incision or prevent the formation of a ventral hernia, but I believe it is of service for that purpose when any great strain is put upon the abdominal walls. Patients should not be allowed to get out of bed too soon. Three weeks is sufficiently early, and I earnestly condemn the practice of sending patients home in two weeks after section. Our object in doing abdominal sections is to cure our patients and not simply to make additions to our statistics. It is a mistake to keep a patient lying too long upon her back. My rule is, in cases not requiring drainage or the extra-peritoneal treatment of a stump, to change the position from the back to the side after the first twenty-four hours. I do not mean by this that the patient is allowed to roll from side to side at will, but to have the nurse place her hands under the shoulder and hip and slip a soft pillow beneath the patient, so that the body rests upon the opposite side. After some little time, the pillow can be removed and placed under the opposite side of the body; thus the patient can be kept very comfortable. In one week after section, I allow my patients to assume a half-sitting position in bed. I feel certain that by following this plan my cases make quicker

recoveries, and as there is no reason for doing otherwise, except, perhaps, that of custom, it seems to me more sensible to take advantage of the golden rule of surgery, which teaches us to look after the comfort of our cases.

As regards the use of opium in the after-treatment of abdominal and pelvic cases, I firmly believe the drug has no place even for consideration under these circumstances. It has alone done more harm in the surgery of the abdomen than even unskilful operators or faulty technique; but those who still cling to this relic of the Dark Ages cry out, "What are we to do with those cases which suffer with severe pain following section?" My answer to them is, "Let them suffer, if opium alone can relieve." Our duty is to save life, not to allow a sentiment of sympathy to control our judgment and thereby cause death. A surgeon whose judgment is controlled by his sympathies should never use a knife, for he is more dangerous under these circumstances to his patient than a poisoned arrow. Those who confide themselves to our care ask for life, not for tears. When we look about us and see the daily and weekly sacrifice of life to the use of opium, we may well feel sorry for ourselves and envious of the next generation, when the entire profession will appreciate the pathology and treatment of such conditions as peritonitis, appendicitis, and like affections.

SOME EARLY PSYCHICAL SYMPTOMS OF TRAUMATIC BRAIN INJURIES.[1]

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THE department of neurology in the practice of medicine has attained such proportions that it would be almost impossible in the limits of a single paper to give any complete history of the advances of even one year. In this country there are six large journals devoted exclusively to this branch—five quarterlies and one monthly, viz.: *The Journal of Insanity*, *The Alienist and Neurologist*, *The Journal of Psychology*, *The Journal of Mental and Nervous Diseases*, *The Journal of Inebriety* and *The Review of Insanity and Nervous Diseases*. Abroad, the periodical literature is more voluminous, and books and pamphlets follow each other rapidly. A neurological library of to-day, to be complete, would include thousands of volumes and pamphlets. This would be exclusive of the literature which appears in the general journals, comprising records of cases, theories and discussions of diseases of the brain and nervous system.

The different fields of neurology have been studied until the specialists find it almost impossible to master more than a single phase of the subject. The lunacy specialists, the specialists of nervous diseases, the specialists of alcohol and drug-diseases, the specialists of idiocy and congenital diseases, the experimenter and teacher of psychology, and the electrician are all examples. The unknown regions of the physiology and pathology of the brain and nervous system are attracting an increasing number of most ardent students, and already the discoveries are very numerous and startling, and the process of learning and unlearning is more and more difficult.

In the department of medical jurisprudence progress and change are less rapid. Seven medico-legal societies and one large quarterly present the many practical topics which are constantly arising. The confusion of theory and practice in both law and medicine, relating to questions of crime and responsibility, has given rise to many strange conceptions of the teachings of science. Thus, from the text-books and legal rulings of judges, the lines of sanity and insanity are laid down as absolute facts. Free will and accountability, judgment, punishment, equity, brain control and capacity, are theoretically regarded as settled facts. All these questions constitute a realm of the densest superstition and error that will continue until this subject is studied scientifically. To-day, the student of medical jurisprudence must pursue his studies above all present theories, text-books and rulings of law. The questions of motive and human conduct must be decided from a knowledge of natural laws of physiological and psychological growth. Science calls for a great revolution and evolution in the medico-legal solution of many of the disputed questions of to-day. The insane, the inebriate, the defectives of all grades and conditions; and the tramp and criminal, can never be restrained or prevented from being sources of peril to all law and order, by theory, or metaphysical abstractions of mind, or legal rulings. Medical jurisprudence of the future must depend on the progress of scientific medicine.

Both neurology and medical jurisprudence are largely influenced by the neurotic element of American civilization. This is a tremendous factor in degeneration and disease, and enters into all degrees of life and living. The family physician and general practitioner are most favorably situated to become the earliest and most accurate students of most of these confusing problems in neurology and jurisprudence. Every year it becomes more and more apparent that the failure to recognize the early symptoms of brain-degeneration and disease constantly increases the army of incurables. The crowded insane asylums, almshouses, jails and hospitals all refer back to early neglect and failure to

[1] Read before the Section of Neurology, American Medical Association, May, 1891.

recognize and apply the means of prevention and cure. A clearer knowledge of neurology. would point to conditions and methods of treatment that could be successfully applied at that time only. An outline of some of these early stages is the central topic of this paper.

There is probably no one disease more often mistaken in its early stages than general paralysis. Even after the symptoms have become apparent, there are confusing halts and a delusive masking of symptoms that often puzzle even experts. A long formative stage precedes the well-defined symptoms, beginning in slight changes of conduct and character, elation of spirits, increased activity of the intellect; the disposition, the manner, the temper, the habits and general character all become altered. Then come acts and words that are unusual; the friends and associates are conscious of some change which they seek to remedy by moral advice. Finally, when some reckless conduct or strange disposition is manifest, the physician is called and the disease is clearly made out. To the patient, this has no foundation in fact, and sometimes the physician joins in this belief, and explains these changes of mind and conduct from some moral basis. Symptoms of alcoholic and sexual excesses are explained in the same way. After a period, in many cases extending over months and years, the nature of the disease is above all question, and beyond all medical skill. This formative stage has been attended by distress, loss, sorrow and most serious blunders. In some cases, criminal acts and sad domestic and pecuniary afflictions have marked this period. If the family physician had made an early diagnosis, and the treatment been based on this, a different history and result would have followed.

Some of the ataxies have a similar obscure, early stage, marked by psychical disturbances which are regarded as moral lapses. Nearly all forms of insanity begin with this obscure failure of the higher brain centres. Early changes of temper, conduct and character, defects of emotional control, defects of reason, slight and obscure at first, are clearly the oncoming shadows of disease that should be anticipated and pointed out. These changes and early symptoms are not new to science, but in most cases they are overlooked and seldom receive the attention they deserve.

There is a class of symptoms that is already becoming the centre of serious controversy. Such symptoms are not only not recognized in the early stages, but are sharply disputed by both laymen and physicians. I refer to the alcoholic, opium and other drug-symptoms, which are affirmed to be purely vicious acts and the voluntary giving way to the lower animal impulses. Public opinion has sought to control them by fine and imprisonment. The medical profession accepts this view, only asserting that after a time the use of these drugs brings on diseased states. The impulsive desire for alcohol and other narcotic drugs is always a symptom of some form of brain-palsy. There are two classes of cases in which this fact seems very clear. The first class includes cases with a history of a distinct traumatism—noticeably, sunstroke, blows on the head, profound wasting illness and severe injury of any kind. Recovery follows, but with it appear changes of temper, character and emotions, and then comes the drink-impulse or the use of some form of opium. These drugs cover up other changes and are interpreted as the cause of all subsequent degeneration and disease. Many of these cases die of pneumonia or some other acute disease, others go on to insanity and become inmates of asylums, while the majority remain as common drunkards or inebriates, slowly growing worse year after year. They are treated as low, voluntary inebriates, despised, persecuted and punished, and die the types of wretchedness and misery, frequently leaving defective families that are always burdens to the world.

Cases belonging to the second class of inebriates or drug-takers have a distinct history of psychical traumatism. A man, previously temperate and well, will have a history of profound mental shock, such as sudden, overwhelming grief at the loss of wife, or children, or property, or of failure to realize some absorbing ambition, or of some calamity causing great distress. His entire character and disposition will change, and the drink-impulse will, without any cause, appear suddenly and continue persistently. Several instances have been noted in which the effect of a railroad accident, as a result of which no external injury was produced, was the beginning of the drink-impulse. The sense of sudden fear seemed to so paralyze the brain as to demand alcohol or opium ever after. In these cases, alcohol may be taken at first as a medicine and in moderation, but the degeneration which calls for it is apparent when efforts are made to discontinue its use. Another class of cases shows these symptoms equally marked; thus, persons who fill positions of great care, of business or professional responsibility, and also persons who are most active in business in the prime of life, previously temperate —will suddenly begin to take spirits and rapidly become excessive drinkers, and defenders of its value as a medicine. Such cases are soon incapacitated and die. The drink-symptom is always treated as a moral condition in these cases.

In the first class of physical traumatism, some form of brain-degeneration is apparent in this morbid desire for alcohol and opium. The beginning

and progress of the case confirm this. In the second class of psychical traumatism, a brain-palsy and sudden perversion of brain function and activity take place, and the demand for alcohol and opium is the expression of this state. In the third class, the use of spirits is a symptom of exhaustion and general brain-failure. All these forms of palsy and degeneration are rapidly intensified by the chemical action of the spirit or drug used.

The pathological condition which calls for relief by these drugs has a uniform order of events: beginning at a certain point and passing down, marked by a regular succession of symptoms, reaching a certain termination that rarely varies. The drink-craze is a symptom which should never be misinterpreted or overlooked. Anyone who persists in using alcohol or opium to excess is suffering from brain-degeneration and disease, which requires medical study and care. The use of alcohol or other drugs is, in a certain number of cases, a marked symptom of insanity. This fact has been noted for many years; the abuse generally occurs in neurotics who, after some great strain or mental perturbation, become excessive users of spirits, and continuously or at intervals stupefy themselves with such drugs. When arrested and deprived of spirits in jails, acute mania or melancholy follows; then it appears that the spirit- and drug-craze were only symptoms of insanity concealed and masked by the spirits. The facts in this direction are numerous and startling, and unknown except to the few students who are at work in this field. Scientific study has established this fact, viz.: that the "drink-craze" (meaning the impulsive, unreasoning desire for spirits or narcotics) is a symptom of disease. Whether this is so in all cases at the beginning is not yet established; yet nothing can be more certain than this, that the use of spirits will cause disease and disease conditions in all cases. Another fact is becoming more prominent, that the number of inebriates of all forms is increasing; and with it the army of neurotics and defectives is likewise rapidly growing larger. The problems of causation, prevention and cure are still involved in the realms of obscurity and quackery. Great parties and numerous societies are attempting its solution from the moral side alone.

As a scientific problem it is practically unknown, and yet no question of modern times is so eminently one of causes and conditions that are tangible and within the range of science to understand. The neurologist must point out the road and stimulate the family physician to study these early psychical symptoms, which, like signal-flags of distress, are becoming more apparent. Scientifically, the abnormality of an increasing army of neurotics and suicidal drug-takers, who receive no care or medical attention until their condition becomes chronic, is a reflection on modern medicine. Over five millions of laymen in this country are agitating the question of means and remedies to check this disease. Of the sixty thousand physicians, less than a hundred have given any special attention to the cure and prevention of this wide-reaching malady. The specialists can study these cases in asylums, but the family physician must be the scientific student to point out the early causes and remedies. The drink-problem can never be solved except by physiological and psychological study. This must begin with heredity, growth, nutrition, culture, surroundings and all the phenomena of life. The early psychical symptoms must also be studied, the traumatisms, the beginnings of pathological changes that manifest themselves in the drink-impulse.

This is the path along which science must seek the solution of this problem. The temperance agitator and reformer must give way to the physician. The roar and conflict of parties and societies will die away, and only the voice of science will be heard. Then the armies of inebriates, criminals and insane will be halted, disbanded and forced back to health and rational living. The inebriates will be protected and housed. The saloon will disappear, and alcohol will be unknown. This will be a reality when medical men take up this study from a purely scientific point of view.

A CASE OF TABES DORSALIS WITH UNUSUAL SYMPTOMS.

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ALTHOUGH so much has been written on tabes dorsalis that its cardinal symptoms are familiar to every educated physician, the disease not rarely passes unrecognized years after its onset. As a rule, the patient has no suspicion of the sinister meaning of the earlier symptoms, and when he consults a physician some one of the very numerous special features of the disease may be so pronounced that its true nature is entirely overlooked. Although the classical type of the disease is well known, reports of individual cases are not withoutvalue.

Mrs. L. F., aged forty-seven, a housekeeper, had had two miscarriages; finally bearing one living child that died at eight months. The family history is negative, and there is no venereal history.

About three weeks before I saw her, she had consulted Dr. L. C. Brasher for an attack of colic, setting in suddenly and attended with severe pain referred to the umbilical region. There was vomiting, but no diarrhœa. The attack lasted two days and was accompanied by elevation of temperature.

There appeared to be no sufficient cause for the attack. Subsequently the patient stated that she was subject to rheumatic pains in the legs, sudden and sharp in character. According to her statement, the attacks of pain were usually preceded by chills, accompanied by fever and followed by sweating. She had recently been alarmed by a sudden, involuntary drawing-up of the knees, attended with stabbing pain "like string-halt in a horse." On account of these nervous symptoms, Dr. Brasher kindly brought her to me.

Inquiry disclosed that in about four years she had fallen in weight from 137 to 96 pounds, and that her "rheumatism" had troubled her for about the same time. Her appearance was suggestive of phthisis, but the heart and lungs were normal. The knee-jerks were absolutely gone. Standing with the feet together and the eyes closed, great unsteadiness was at once apparent, the patient falling unless supported. The pupils did not react to light, but reacted well with accommodative effort. There was decided awkwardnesss, but no true ataxia, of the arms. The movements of the legs were uncertain and lacking in precision, unless guided by the eyes. The gait was ataxic. Irregular movements of the toes and of the tendons on the dorsal surface of the foot indicated great uncertainty as to the relation of the foot to the floor. The inside of the foot and the great toe especially were not properly applied to the floor. There was no distinct paralysis. The plantar reflex and the superficial reflexes generally were active. In the lower limbs the touch-sense and pain-sense were not impaired, but localization, as tested by the calipers, was imperfect. On the outer side of the big and little toes the application of cold gave rise to a sensation of heat. The sense of posture was good.

The acuity of central vision was almost normal— $\frac{5}{VI}$ in each eye. The ophthalmoscope revealed no change in the fundus of either eye. The visual fields for white were slightly but distinctly contracted, and the right field for green was irregular. Central color-vision, as tested by Snellen's equally illuminated colored letters on a neutral background, was normal. There was no ptosis or other insufficiency of the ocular muscles.

Hearing: right, $\frac{3^{0}}{LX}$, bone conduction impaired; left, watch heard only when pressed against the auricle, but bone conduction only moderately impaired, the defect being principally due to injury of the drum. The sense of smell is absent, though stated as formerly good.

Occasionally there is some difficulty in passing urine, the flow being sluggish, so that a long time is required to empty the bladder. The urine is normal. The skin is harsh and dry.

Nitrate of silver was prescribed; in a few weeks the patient returned, reporting an entire absence of the "string-halt" symptom and comparative freedom from the stabbing pains; but a new and curious symptom had appeared. In standing or walking, both knees suddenly give way, and the patient makes an involuntary and rather comical bow, immediately recovering her position. She is at times seized with general tremor, attended with this painless doubling-up of the knees. On the whole, the nitrate of silver seemed to have done good.

In this case there can be no doubt as to the diagnosis. The lancinating pains, the loss of knee-jerk, the Argyll-Robertson pupil, the swaying with closed eyes, and the ataxic gait, form a clinical picture that is complete and unmistakable. It is not necessary to speak of the points of differential diagnosis. The disease is often overlooked, not from a want of knowledge of the points of differential diagnosis, but because its first clinical appearance is obscure and ill-defined. Thus, the abdominal cramps and vomiting, for which the patient sought medical advice, were indistinguishable from gastric or intestinal crises, except by the rise in temperature, which does not occur in the crises of tabes; yet such attacks hardly suggest tabes in one case out of a hundred. When the pains become severe enough to attract attention, they are commonly supposed to be rheumatic or neuralgic. The chill, fever and sweating, said to have been associated with the pains, would in many localities be regarded as malarial; inquiry developed the fact that the chill was merely a sense of chilliness, and that the sweating was at least partly due to hot bottles used to relieve the pain. There was no opportunity to measure the fever with a thermometer.

When failing vision is the first symptom, it is easy to ascribe it to presbyopia and to disregard it until the atrophy of the optic nerve is far advanced. Fortunately the ophthalmologist is alive to the diagnostic importance of atrophy of the optic nerve in relation to degenerative processes in the central nervous system. The ear is more or less diseased in a majority of tabetics, while laryngeal palsies[1] or crises are not rare; so that the patient may first consult an aurist or laryngologist. More rarely a perforating ulcer or trophic joint-disease, or an eruption of herpes or pemphigus,[2] may give the case a surgical or dermatological aspect.

With all of these avenues of error we must constantly be on our guard. The only way to avoid mistake is to examine all cases thoroughly. The habitual testing of the knee-jerk and allied phenomena would not only prevent tabes passing unrecognized, but would often lead to the early detection of other nervous diseases. It is especially necessary in cases supposed to have chronic rheumatism.

In cases of failing vision, not explicable by errors of refraction, ophthalmoscopic examination should never be omitted. Gray degeneration of the nerve

[1] Marina: Zur Symptomatologie d. Tabes Dorsalis, Arch. f. Psychiatrie, xx. 1.

[2] Buzzard: Diseases of the Nervous System, chap. viii.

is alone sufficient to render tabes probable. Mapping the visual fields is of diagnostic value in many forms of nervous disease, and should not be omitted in tabes, even when vision seems to be unaffected. Changes in the field for white and for colors will reveal incipient atrophy before there is loss of central vision or confusion of colors, and even before an expert with the ophthalmoscope can be sure of any change in the appearance of the nerve.

The sudden involuntary movement and sudden weakness of the legs in the case here reported are worthy of attention. Gowers[1] says: "A sudden, sharp pain may be accompanied by a sudden reflex, spasmodic movement of the legs or by inhibitory weakness. In one case sudden pain would often make the patient fall on his knees." This spasmodic movement is doubtless dependent upon the same cause as the exaggeration of the superficial reflexes, namely, irritation of sensory fibres. The sudden giving way of the legs was first described, I believe, by Buzzard. In his admirable lecture on "Little-Recognized Phases of Tabes Dorsalis"[2] he cites four cases of his own in which it occurred, and in one of them it was the only symptom for which the patient sought relief. It can hardly be, however, as he states, "of very common occurrence." Marina[3] found it in but one of forty carefully observed cases. Gowers speaks of it as an inhibitory effect of pain, but in three of Buzzard's cases it appears that it was not associated with pain, and in my case it was not. Possibly, as has been suggested, there are other afferent fibres than those conducting strictly sensory impulses, irritation of which may inhibit muscular action.

The fact that both sudden spasmodic action and sudden paralysis occurred in this patient makes it probable that both depend upon the same condition.

ORIGINAL LECTURES.

SKIN-GRAFTING.

A Lecture delivered at the Philadelphia Hospital.

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LECTURE I.

GENTLEMEN: Before you is a patient who had an indolent and ugly ulcer of the leg, one of that class of patients that haunt the hospitals, and make the surgeon despair, because all that could be done for them had been done. These cases, which resist the best efforts, are just those which should be taken up and if possible cured, for they are surgical cases, and there is no problem which should be given up as impossible of solution. I have told you what these ulcers are and what must of necessity be done in order to heal them. You know they are generally due to varicose veins, that have so distended the tissues and altered their nutrition as to cause the surface of the skin to slough; the skin having fallen off, there is a solution of continuity, which readily becomes infected. Granulation-cells develop on the surface and Nature tries to heal the parts, but being ill supplied with blood, they are destroyed by micro-organisms, and a foul appearance of the surface is the result. After giving the required tonic, the foul cells should be removed by scraping the parts, thus leaving a healthy bleeding surface that should be protected from the atmosphere, and hæmostasis or stoppage of the blood permitted, thus preventing germs from gaining access. Then you will have a surface covered with healthy granulations. That being the case, all that is required for permanent cure is to clothe the surface with epithelium. You know that a little epithelium placed on an ulcer, if the parts are prepared, will grow and form a small island, which will spread in all directions, forming new sources of epithelium, which would have to start from the edges of the ulcer had nothing been done. Success having followed the surgeon's efforts, it was evident that if a small piece would spread, a large piece, the conditions being equal, would do likewise. Now, instead of taking a small bit of epithelium, we take as large a piece as we choose, and cover the whole ulceration with this, the parts first having been prepared, and hope that it will adhere to the subjacent structure.

You saw how I covered nearly the whole surface of the ulcer with epithelium. The epithelium was taken from the outside of the thigh. The place has healed beautifully; the epithelium has been restored; it has spread from the side and covered the whole surface that was made bare; but this is more intensely red than the rest, and shows a trace of having been tampered with. That is so, but there is a reason for it: the bloodvessels are nearer the surface here than in the surrounding skin. There is less of an epithelial covering here than there, but sufficient to cover the surface—about the same amount that would exist about the mouth, where, as you know, the mucous membrane resembles the skin, minus the horny layer; but the patient will not be deprived of this horny layer, as there will be a continued irritation of these spots, and in the course of a year, instead of remaining red, they will become thicker from the continual irritation. Not only that, but, very curious to say, the condition of these epithelial cells will be slightly altered, as a result of which pigment will be deposited, and, instead of being rosy, the surface will have a brownish appearance. Therefore do not hesitate to remove epithelium, but remove as large a piece as you wish; it will always grow again if you use aseptic measures and prevent the entrance of microörganisms.

Now for the ulcer itself. The dressing was left during two weeks, until a few days ago, and on being removed we found pretty nearly the same condition as you will see here now. All of you who have seen this ulcer will remember that it presented an ugly appearance; now it is still uncovered by epithelium in some places, but more than four-fifths of its surface

[1] Diseases of the Nervous System, Am. ed., p. 292.
[2] Op. cit., Lecture XV.
[3] Op. cit.

have practically healed. It has not the two layers of epithelium found in mucous membranes, still less the three layers of the skin, but only the beginning, the lowermost layer of epithelium. This layer is transparent, and you can almost see the granulations beneath, but still it is here. There are some islands that are perfectly clear, and here the epithelium is as clear as on the surface of the gum. None of you will tell me that the gum is ulcerated, and this ulcer has as much epithelium as is on the surface of the gum.

The point to which I wish to call your attention is this: Here is a perfectly sterile wound; there is no suppuration; all granulations are doing their duty, that is, building fibrous tissue; a delicate layer of epithelium covers the surface of the ulcer; practically, it is healed, and there is nothing more to do with it. All the epithelium has engrafted itself upon the underlying granulations, and the whole surface is protected from the atmosphere by this very delicate layer of epithelium. What should be done at present, in order to give this patient the fullest chance of a perfect result? Nothing but keep him in bed and keep this covered with a sterilized dressing, because, delicate as this covering is at present, it would be possible that a little excoriation would open many mouths to receive germs from the atmosphere and cause infection of the part. Therefore, the precaution to take is to place a sterilized dressing on the part and leave the patient alone for a week or two, and by that time the skin will have thickened, and there will be the same appearance as we saw upon the thigh.

Now that you have looked at this, I wish to call your attention to another point. Remember, when you graft, that all you can hope to have grow must have life. As we know, the surface layer of epithelium is not alive; it is dead, horny epithelium; it receives no nutrition from the vessels below; it falls off as dandruff; we cannot expect this to grow. Hence, do not be surprised, when you remove the dressing, to be faced with the fact that the procedure seems to be a failure. It looks as if the whole graft is coming off as a pellicle. No! the lowermost layer does plant itself on the underlying structures, and it is only the horny layer that comes off. When I take a graft I leave the fibrous layer below, and I know I have cut to the papillary layer because I have hæmorrhage. I know I have gone deeply enough to cut the top ends of the capillaries, therefore I transplant all above the fibrous layer. When implanted, the deeper layer proliferates and gradually pushes off the superficial layer, and this falls off; the cells are too far away from the bloodvessels to receive nutrition. Remember, therefore: you must expect this horny layer to fall off, because it is dead. What grow are the epithelial cells in the papillary layer and the mucous layer of Malpighius.

This patient was brought before you two weeks ago, suffering with a keloid. He is an epileptic, and in one of his attacks grasped a steam-pipe and burned the palmar surface of the hand and thumb. You know the great tendency of a burned surface to develop a keloid, which is simply a scar that does not stop growing. Here you have injured yourself and the wound heals, because a scar forms on the surface and it stops there; but it does not always end so; sometimes a hard tumor grows where there ought to have been a soft scar. That was this man's condition; he had a keloid on this surface. It did what cicatricial tissue does everywhere else, and the tendency was for the man's thumb to be drawn into the hand and to be bound down. The keloid was also growing on the palmar aspect of the fingers. Looking at it from that standpoint, and knowing that the man would simply be losing the use of the thumb, the indication was to remove the growth and treat the wound as if it were a simple ulcer.

I removed the growth thoroughly and the skin for half an inch about it, laying bare the adductor pollicis and flexor brevis pollicis. Here was muscular tissue laid bare, and we could not expect epithelium to grow on muscular tissue. What was to be done? Simply leave the patient alone until the surface should develop granulations, and then graft. A week after having removed this keloid, we proceeded to graft the surface as in the case of the ulcer which you have just seen. Here the tissues being plentifully supplied with blood, and being perfectly healthy—not diseased as the leg was—there was less trouble in getting perfect union, every graft "taking," and covering the surface perfectly with epithelium.

You notice a certain darkened appearance of this surface, which you must not mistake, as it is merely a scab. The parts were healthy, and there was a little oozing of serum, which is nothing but liquor sanguinis and fibrin. The water of the serum evaporating, left the scab which you see. Therefore do not be puzzled as to what a scab is: it is simply serum from which the water has been evaporated, leaving the albumin and fibrin and some epithelial cells in the meshes of the fibrin. Here the whole epithelial surface has been restored. Secondly, I wish to draw your attention to these two fingers. You know the tendency of a wound resulting from a burn to contract. These fingers were already turned in, and the tendency was that they would be more and more turned in. Knowing that the tendon was surrounded by fibrous tissue, we stretched the fingers and cut directly down upon the tendon, not separating it entirely, but cutting about three-fourths of it away, leaving the remaining fibres to be kept in apposition by means of suture. Remember, when you wish to perform tenotomy and do not require much stretching, that it is well to leave a few of the fibres which will act as a suture. A splint was put upon the fingers, and the space between the ends of the tendon was filled up with granulations. Here we will have the tendon restored, but much longer than it was before.

UTERINE MYOMATA.

BY E. E. MONTGOMERY, M.D.,
VISITING PHYSICIAN TO THE PHILADELPHIA HOSPITAL.

GENTLEMEN: The first patient I bring before you is a colored woman, who entered the hospital two days ago. I have not, as yet, had an opportunity to examine her. She presents the following history: She says she is sixty years old, and has had twelve children, all dead. Her health has been fairly good, until three years ago, when she noticed an enlargement of the abdomen, which has steadily increased. This enlargement is at times greater than at others; she suffers much pain and distress in the abdomen and particularly in the pelvis.

As the abdomen is exposed, you see that its walls are thin, and through them two irregular projections are visible. The larger projection is on the left side, while the smaller and more distinctly outlined projection is on the right. As we look at the abdominal surface, we see that the skin is striated, showing cicatrices resulting from previous distention; also that the abdominal walls move freely over the subjacent structures. In the examination of a patient presenting such a condition we at once ask ourselves what structures may be involved, and what growths are most likely to occur at the time of life of the patient.

From a study of the case we at once arrive at the conclusion that it is not one of pregnancy, on account of the age of the patient and the peculiar appearance of the tumor, although upon inquiry she informs us that she has not ceased to menstruate, and that she suffers from an irregular bloody discharge. Pregnancy is an exceedingly rare occurrence after fifty years of age, although there are cases on record in which women have become pregnant and given birth to children at as late a period as sixty.

Without further examination we will proceed to discuss the possibilities in the case before us. Besides pregnancy the abdomen might be distended by fibroid tumors; by tumors of the kidneys, ovaries, omentum or alimentary canal. Fibroid tumors are uncommon after the climacteric period, unless they have existed previously. Fibroid tumors are likely to become quiescent or even reduced in size with the occurrence of the menopause. After the cessation of menstruation, ovarian growths are more common than growths of the uterus. Disease of the ovaries and tubes often makes its appearance after menstruation has ceased, but in the majority of such cases the disease is of a malignant character. Tumors of the omentum or of the intestinal tract are also likely to be malignant. That the tumor in the case before us is not one of the kidney is probable from its situation in the lower part of the abdomen, and because the entire mass is somewhat symmetrical, while a renal tumor would be situated to one or the other side of the median line.

What has been said of the character of this abdominal growth does not necessarily preclude the possibility of its belonging to any of the conditions named, excepting that of renal tumor. The enlargement is irregular and somewhat nodular. The larger mass, situated upon the left of the median line, extends above the umbilicus, presenting a convex surface laterally and a sharp margin medianly, and is without question a solid tumor. It is freely movable in all directions, and evidently has a small pedicle of considerable length. The tumor on the right side is less movable; it presents a conical projection, recognizable on inspection, and evidently extends downward into the pelvis. Both masses are dense and resistant to such a degree as to scarcely permit us to believe that they are cystic in character. The tumor upon the left, with its sharply defined edge, is certainly not cystic, as a cystic tumor would be likely to be spherical in shape.

We are accustomed to divide the abdomen into different regions by means of arbitrary lines; remembering the viscera that are contained in each region, we can specify the organ from which a peculiar growth originates. The situation of these growths in the lower part of the abdomen indicates that they have originated from the uterus, the ovaries or the omentum. We would infer that the omentum is not involved, because the tumor is freely movable. Omental growths are generally malignant and do not attain great size without forming firm adhesions to adjacent viscera or surfaces.

Is the growth ovarian in origin? Ovarian growths are usually cystic, although they may be solid, such as fibroma, sarcoma; the contents of colloid or dermoid cysts are thick and viscid, and fluctuation would be indistinct or not discernible. Fibromas of the ovary are usually small in size. Sarcomas do not attain to large size without giving rise to greater or less effusion. Colloid cysts usually form extensive adhesions. For these reasons we are obliged to eliminate the possibility of the growths being ovarian.

By a process of exclusion we are driven to the uterus as the only source of development of the tumors. The finger, introduced into the vagina at a point one inch from the vulva, comes in contact with a hard, dense mass, which fills up the pelvis; the finger can be passed around the mass in every direction; but passes with difficulty between this mass and the symphysis; above the symphysis is felt a small teat-like projection, which we recognize as the remains of the cervix; movement of the tumor on the right side is transmitted to the finger kept in contact with this pelvic mass, demonstrating that both parts belong to the same tumor. Notwithstanding the inference from the age of the patient, we are forced to the diagnosis of uterine fibroid or myoma. Rectal examination enables us to pass a finger over the posterior surface of the tumor, which has made pressure upon the rectum, interfering with the evacuation of the bowels, in this way giving rise to the occasional increase in the size of the abdomen, of which the patient has complained. From the size of the tumor, and from the persistence of the menstrual flow, it is probable that the tumor has existed for a number of years, and had attained considerable growth before it was recognized by the patient or her attendant.

Uterine tumors or fibroids are divided into three classes, according to their situation or relation to the uterus. Thus, we have submucous tumors, which have originated from the inner portion of the uterine walls, and, attaining such size as to be no longer accommodated in their original situations, are pushed into the cavity of the uterus. Attached to the uterine wall by a stalk or pedicle such a tumor is known as a polypus. Situated in one or the other wall, with a broad base, it is called a sessile fibroid. If the tumor has developed from and occupies the greater part of the muscular layer of the uterus, it is known as an interstitial fibroid. Such a tumor may attain considerable size and involve the greater portion of the structure of the uterus. It is quite possible that the tumor upon the right side belongs to this class. Tumors of the third class are known as subperitoneal myomata; they develop in the external muscular layer of the uterus, and in their growth are pushed beneath the peritoneum, and may be attached to the uterus by a pedicle of varying length and thickness. The tumor upon the left side probably belongs to this class. Adhesions sometimes form between such tumors and the abdominal viscera. The peristaltic action of the intestines may cause lengthening or even

separation of the pedicle, so that a mass may be found in the abdomen at some distance from the uterus.

Now, if the tumor is pushed into the cavity of the uterus, suspended by a pedicle, it can readily be removed by grasping it with a pair of volsella forceps and twisting its pedicle until separation takes place; or the pedicle may be severed with a knife, with the galvanic cautery, or with a wire *écraseur*. If an interstitial tumor is present and the cervix can be dilated so that the tumor can be readily reached through it, the wall of the uterus may be incised and the tumor enucleated, partly with the finger and partly by means of Thomas's serrated spoon curette, and then removed. If a tumor is too large to be delivered *en masse*, it may be cut away in parts with the scissors until entirely removed. Such operations, however, are attended with much danger. In the case before you, however, the removal of the mass through the vagina is not feasible, as the tumor is entirely too large. Even were it possible, the removal of a mass constituting a portion of the fundus of the uterus would be attended with too much hæmorrhage to be justifiable.

In such a case is an operation for the removal of the tumor feasible or justifiable? From the level at which the cervix is felt it is evident that it could be drawn out through an abdominal incision and used as a pedicle. Before proceeding, however, to such an operation it is important that the condition of the viscera and secretory organs be carefully examined, as not infrequently, when tumors fill the pelvis, pressure is made upon the ureters, leading to their distention and hydro-nephrosis; indeed, in some cases, the kidneys become sacculated, their pelves dilated and their parenchyma attenuated. Under such conditions operative interference would be attended with serious complications and the probable death of the patient.

Careful examination will be made, and if an operation seems feasible, and the patient is willing to submit to it, an effort will be made to relieve her of this growth and its consequent distressing symptoms.

MEMORANDUM.

METHODS OF STAINING BACILLI.

BY C. F. GARDINER, M.D.,
OF COLORADO SPRINGS, COL.

THE method of staining bacilli in early cases of lung trouble, when the physical examination shows little or nothing, has now become such a matter of routine with most physicians that it holds a place as an aid to diagnosis as important as that of examining the urine for albumin and casts in diseases of the kidneys; and a rapid and reliable method of staining the sputa, one requiring but a limited number of solutions and simple technique, is valuable not only to the busy practitioner, but especially to the medical examiner for life insurance, who, more than the average physician, has to condense his scientific researches.

Articles have appeared in the journals from time to time upon rapid and easy methods of staining, but so far as I have been able to observe, they all have the objection, either that heat is applied to solutions, or much time and manipulation is required. The following method, shown me by Dr. T. Mitchell Prudden, College of Physicians and Surgeons, New York City (it first appearing, I believe, in a Swiss medical journal), I have now used here for three years, often several times daily. In my hands it has been most convenient, rapid, and successful, enabling me at times to report upon several cases in a very short time.

Two solutions are made, the first being practically a carbol-fuchsin:

SOLUTION NO. 1.

℞.—Fuchsin	15 grains.
Alcohol	2½ drachms.
Carbolic acid (sat. sol.)	½ drachm or 30 minims.
Water	2 ounces.

Dissolve the fuchsin in the alcohol by shaking, and to this add the carbolic acid and water.

SOLUTION NO. 2.

℞.—Methyl-blue	2 ounces.
Sulphuric acid, C. P.	½ ounce.
Water	1½ ounces.

Dissolve the acid in the water, and when cool add to the methyl-blue. The cover-glass, being prepared as usual, but with rather a thin film of sputa and lightly flamed, is placed for three minutes in solution No. 1, taken out and washed well in water to remove excess of red, then put in solution No. 2 for two minutes, then washed in water and examined. If reddish masses appear after solution No. 2 is used, the specimen can be inserted again in No. 2 for another minute or so. These solutions can be kept in properly labelled bottles ready for use, and will keep unchanged for some months.

Solution No. 1 is apt to have a coating form on the surface if exposed to the air too long.

There is one point to be observed, which is a vital one: only reliable dyes should be used, such, *e.g.*, as Professor Grübler's aniline dyes. In trying other and inferior dyes I have had decided difficulty in making these solutions stain satisfactorily. It may be well to mention that to clearly see tubercle bacilli, a microscope having at least a good one-sixth objective, that, with an Abbe condenser, will magnify from five to six hundred diameters, is a necessity.

[The foregoing is practically what is known as Gabbett's method. The search for bacilli may be further facilitated by adding dilute caustic soda to the sputum and gently heating. In the course of from twenty-four to forty-eight hours the bacilli will have fallen to the bottom. The supernatant fluid is decanted and cover-glass preparations made from the sediment. In this way bacilli may be detected when present in small numbers, and when they might elude detection by another method.—*Editor of* THE MEDICAL NEWS.]

MEDICAL PROGRESS.

American Inventions and Discoveries in Medicine, Surgery, etc.—At the recent celebration of the beginning of the second century of the American patent system, DR. JOHN S. BILLINGS, U. S. A., delivered an address upon American inventions and discoveries in medicine, surgery and practical sanitation. He could learn of but one system of medicine to which a patent had been

granted—Thomsonianism. "The right to practise this system, with a book describing the methods, was sold by the patentee for twenty dollars." Patent medicines, the recipes of which must be furnished, are much less numerous than proprietary medicines, which can be protected by trade-marks and copyright. Between the years 1880 and 1890, 540 patents were granted for medicines.

According to the census of 1880 there were in the United States 592 establishments devoted to the manufacture of drugs and chemicals, the capital invested being $28,598,458, and the annual value of the product $38,173,658, while there were 563 establishments devoted to the manufacture of patent medicines and compounds, the capital invested being $10,620,880, and the annual value of the product $14,682,494.

"We are a bitters- and pill-taking people. From the commercial and industrial point of view the great importance of patent and proprietary medicines is connected with advertising. The problem is to induce people to pay twenty-five cents for the liver-encouraging, silent-perambulating family pills which cost three cents."

Dr. Billings said further:

"The most important improvements in practical medicine made in the United States have been chiefly in surgery in its various branches. We have led the way in the ligation of some of the larger arteries, in the removal of abdominal tumors, in the treatment of diseases and injuries peculiar to women, in the treatment of spinal affections and of deformities of various kinds. Above all, we were the first to show the uses of anæsthetics—the most important advance in medicine made during the century. In our late war we taught Europe how to build, organize and manage military hospitals; and we formed the best museum in existence illustrating modern military medicine and surgery. Our contributions to medical literature have been many and valuable; and our Government possesses the largest and best working medical library in the world. We have more doctors and more medical schools, in proportion to the population, than any other country, and while this is not good evidence of progress, I am glad to be able to say that the standard of acquirements in medical education has been and is now rising, and our leading medical schools are now being equipped with buildings, with apparatus, with laboratories, and most important of all, with brains, which enable them to give means of practical instruction equal to any to be found elsewhere."—*Boston Med. and Surg. Journ.*, April 9, 1891.

A Case of Pseudo-Syringo-myelia.—At a clinical lecture CHARCOT (*La Semaine Médicale*, May 13, 1891) presented a baker of twenty-three, who was injured by a bullet which entered the body to the right of the seventh cervical vertebra, following which right hemiplegia developed. The bullet was not found. The wound healed kindly, the hemiplegia disappeared, and in two weeks the patient returned to work. Three years subsequently, in lifting a heavy weight, he felt an intense pain in the back, followed by paresis of the right lower extremity. Other symptoms of spasmodic hemi-paraplegia developed. The right upper extremity in turn became involved. The thenar and hypothenar eminences became wasted, the flexors and interossei enfeebled. On the inner aspect of the forearm the tactile sense was unimpaired, while the perception of heat, cold, and pain were lost. The atrophied muscles presented reactions of degeneration, but no fibrillary twitching. Slight scoliosis existed in the dorsal region. There was no nystagmus or diminution of the visual field. The right pupil was small, but responded to light. The eyeball was retracted. On the left side, below the level of the axilla, was a zone of dysæsthesia. A touch, a puncture, heat and cold were all perceived as painful sensations.

The explanation of the symptoms depends upon the lodgment of the bullet, in the primary accident, in the body of the first or second dorsal vertebra, which, undergoing softening, gave way when the heavy weight was lifted, with consequent compression of the right half of the cord and first pair of dorsal nerves.

Thymolo-acetate of Mercury in the Treatment of Pulmonary Tuberculosis.—TRANJEN, a military surgeon of Bulgaria, makes (*Berliner klin. Wochenschr.*, April 20, 1891) a preliminary report upon the treatment of pulmonary tuberculosis by means of intra-muscular injections of thymolo-acetate of mercury. Three parts of the latter were carefully mixed with forty of liquid paraffin; every seven or ten days fifteen minims of the mixture were injected deeply into the gluteal region. After the second or third injection, unless fever existed, six grains of iodide of potassium were administered thrice daily. One hundred and eleven injections were made in fifty-two cases, mostly out-patients. In two cases stomatitis developed; in others there was considerable pain at the site of injection; otherwise there were no complications. Tranjen thus formulates the conclusions arrived at from his observations: Decided improvement took place in cases of incipient phthisis; in cases not too far advanced, more or less considerable improvement, subjective and objective, resulted; no injurious effects were observed in grave cases. Ewald, at whose clinic most of the observations were made, in a supplementary note admits that the results of the injections in suitable cases were as favorable as from any other method, but admonishes against extravagant expectations from the treatment.

Glycerin-alcohol.—To assure accurate dosage and rapid absorption, PETIT (*Journ. de Méd. de Paris*, March 15, 1891) proposes the following menstruum for the administration of alkaloids, glucosides, and other active medicinal agents:

℞.—Glycerini (sp. gr. 1.250 at 66°)	.	333 parts.
Aquæ destil.	.	147 "
Alcoholis (95 per cent., q. s. ut fiat at 66°)	.	1000 "

This mixture may be preserved indefinitely; it does not suffer by evaporation; it is a solvent of most medicaments.

Sterilization of Catgut.—CURTILLET (*Prov. Med.*, No. 20, 1890) states that catgut can be sterilized by heating for a half-hour in a partially closed glass vessel at a temperature of 284°, gradually increased to 302°, and then placing in absolute alcohol. Catgut thus treated will remain for an indefinite time sterile, strong and pliant.—*Centralblatt für Gynäkol.*, May 9, 1891.

Resopyrin.—By combining resorcin and antipyrin ROUX has obtained a mixture to which he gives the name of resopyrin. It is an odorless body of feebly pungent taste, which crystallizes in colorless, oblique, rhomboidal prisms; it is soluble in 100 parts of alcohol, in ether, and in chloroform, but is scarcely soluble in water.—*Journ. de Méd., de Chir. et de Pharmacol.*, April 20, 1891.

Pharyngitis Due to Pneumonia-cocci.—RENDU (*La Semaine Médicale*, May 13, 1891) has reported the case of a woman, twenty-four years old, who developed an intense pharyngitis after having slept in the same dormitory as three others with pneumonia. A mouse inoculated with some of the saliva died in eighteen hours; its blood and viscera contained large numbers of pneumonia-cocci, which also developed in agar cultures made with blood from the mouse. Several days subsequently, a second case of pharyngitis developed in the same ward; inoculation and cultivation were omitted. Pneumonia-cocci may be found in the saliva in health, but then are not virulent.

Paroxysmal Salivation in General Paralysis.—FÉRÉ (*La Semaine Médicale*, May 13, 1891) reported to the Société de Biologie the case of a man of thirty-nine, with symptoms of general paralysis—bilateral ptosis, inequality of the pupils, right hemiparesis, intellectual enfeeblement, etc.—in the course of which numerous epileptiform attacks, involving the right side of the face and right arm, occurred. Each paroxysm was preceded by profuse salivation, which never took place independently. The salivation was attributed to an irritation similar in character and situation to those upon which the epileptiform seizure depended.

Œdema of the Glottis Following Influenza.—Before the Imperial Society of Medicine of Constantinople, BAVACHI (*Gazette Méd. d'Orient*, April 15, 1891) reported three cases of influenza in which œdema of the glottis developed. One was in a man of fifty, the second in a man of thirty, and the third in a girl of three. The first died, the general condition not being favorable for tracheotomy; the other two recovered without operative interference.

Cholagogue Tablets.—HUCHARD:

℞.—Sodii benzoatis, Sodii salicylatis, Rhei pulv. } of each . 1 drachm.
Ext. nucis vomicæ . . . 5 grains.
Ft. tabellæ no. xx.
Sig.—One at each meal.
—*La Méd. Mod.*, May 7, 1891.

Fumigant for Asthma.—PLANT:

℞.—Stramonium leaves, Green tea } of each 1 ounce.
Lobelia inflata . . . 3 drachms.

Add a saturated solution of potassium nitrate, dry, and preserve in a well-stoppered bottle. A teaspoonful suffices for a fumigation.—*La Sem. Méd.*, April 29, 1891.

Boro-glyceride Cream.—Dissolve one part of boric acid in twenty-four parts of glycerin, and add to the mixture five parts of lanolin and seventy parts of vaseline; cool and perfume according to taste.

Methods of Making Corrosion Preparations.—In an address before the American Academy of Arts and Sciences, PROFESSOR DWIGHT describes the methods of making corrosion preparations in use in the Harvard Medical School. The object of the method thus named is to preserve the shape of cavities—ducts, vessels, or spaces—by injecting them with a hardening fluid and then destroying the organ with corroding or digesting substances, leaving the cast intact. Three methods are described:

1. The injecting mass is a mixture of resin and white wax colored with paint dissolved in balsam of copaiba. The organ is destroyed by hydrochloric acid and water, and the cast given a gloss and greater strength by pouring over it a solution of gelatin in acetic acid. Different vessels or parts of an organ may by this method be injected in different colors. The objections to it are that it is difficult to carry out, and the preparation is brittle.

2. The use of Woods' fusible metal. This consists of bismuth seven parts, lead four parts, tin two parts, and cadmium one part. It melts at a low temperature, and can usually be injected merely by its weight. The tissues are destroyed by caustic potash. By this method different vessels cannot be made of different colors, and, owing to their weight, the casts in time tend to become distorted.

3. By celloidin, injected cold and slowly, by repeated forcings through a syringe, of which the piston is driven by a screw. This method allows fine and variously colored casts to be made. The soft parts are destroyed by an acid or digesting substance.—*Boston Medical and Surgical Journal*, May 14.

The Operative Treatment of Goitre.—In an inaugural dissertation BALLY reports the results of operation in 77 cases of goitre, treated at the clinic of Socin at Basle, in the period between January, 1887, and September, 1889. Of these 24 were cystic, 24 colloid, 19 mixed, 7 parenchymatous, 1 fibrous, 1 a cystic adenoma, and 1 a fœtal adenoma. In one case two operations were performed. Five were treated by puncture and injection, 1 by total extirpation of the thyroid, 14 by partial removal of the gland, and 58 by intra-glandular enucleation. The conclusions arrived at, as a result of a study of these cases and of those reported by others, are as follows: Intra-glandular enucleation of one or several goitrous nodules is usually practicable, excepting in the case of malignant strumæ, diffuse parenchymatous or colloid hypertrophies of the thyroid, exophthalmic goitre and goitres with numerous disseminated nodules; the layer of tissue separating the capsule of the gland from the goitre is readily detectable; hæmorrhage is usually not alarming. In the rare cases in which it becomes alarming, the thyroid vessels may be ligated and partial extirpation performed. Injury of nerve-fibres, and the resulting palsy of the vocal bands, is avoidable. The probability of recurrence is not greater than in the case of partial extirpation. Unfavorable results, as tetany or symptoms of cachexia, were observed in no case, and in none of the cases in which partial extirpation was performed did the tissue left behind disappear.—*Correspondenzblatt für Schweizer Aerzte*, May 1, 1891.

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SATURDAY, JUNE 13, 1891.

THE TREATMENT OF EXTRA-UTERINE PREGNANCY BY EXTIRPATION PER VAGINAM.

As the literature of this subject increases it may be observed that, although in the early stages of extra-uterine pregnancy the difficulty of diagnosis does not lessen, the indications for treatment become more clearly defined. As is true of many surgical procedures, the surgeon has learned when and how to operate by imitating Nature's treatment.

From one aspect cases of extra-uterine pregnancy may be divided into acute and chronic; in the former the indication for operation is the immediate saving of life; in the second, the destruction and removal of the foreign body that imperils the patient's existence; both are accomplished by the processes of Nature in a manner which may to advantage be supplemented by the obstetrician.

There can be no question of the duty of operating upon a patient seized with symptoms of rupture of the sac of an extra-uterine fœtus; and when these symptoms persist and threaten life, the method of operating by abdominal section admits at present of no criticism.

In cases, however, in which the fœtus has grown and developed, the surgeon will do well to adopt an equally radical but more protracted treatment. Nature waits until the death of the fœtus has taken place before attempting to remove the product of conception; when the period of viability has not been attained, and the fœtus is so situated that it cannot, without menace to the mother, grow until term, the surgeon may with advantage wait until Nature has ended fœtal life.

The removal of the fœtus is naturally effected by a process of necrosis in the wall of the fœtal sac. This process may even invade the abdominal wall, as illustrated by a remarkable case described by SHEILD at a recent meeting of the Obstetrical Society of London, in which, in a primipara, sloughing of the abdominal wall near the umbilicus occurred, with the protrusion of a fœtus nearly at term; other cases, in which the fœtus has been discharged piecemeal through tissues near the uterus, have been not infrequently reported. In cases coming under the notice of the obstetrician when fœtal death has occurred and the fœtus is so situated that its removal by abdominal incision is difficult, it is occasionally justifiable to open the fœtal sac, remove its contents, and treat the condition as one would an abscess cavity, by approaching it *per vaginam*. An interesting operation of this sort has recently been reported by FENGER.

The patient was a primipara, and the head of an extra-uterine fœtus could be felt through the vagina. After making a median incision through the perineum, to give room, the fœtal sac was opened by the cautery, craniotomy was performed upon the head which presented at the opening, and the skull was extracted piecemeal; the body easily followed; the sac was irrigated with boric acid solution and thoroughly drained; the vagina was tamponed with antiseptic gauze, and an antiseptic dressing was kept over the vulva. The placenta, which was attached in the left iliac fossa, came away on the seventeenth day. With continued drainage and antisepsis the patient recovered.

The vaginal operation for these conditions is to be reserved, FENGER remarks, for cases in which the tumor is low in the pelvis, the placental circulation has ceased, and suppuration has begun; it may also be chosen in cases of prolonged extra-uterine pregnancy, when the fœtus disintegrates and an attempt is made to discharge it piecemeal. FENGER could distinguish the placental souffle in his case when first examined, but he waited for a week after it had ceased before operating, thus avoiding very

largely the danger of hæmorrhage from the placenta. Cultures were made from the fœtus as soon as it was removed to ascertain the presence or absence of bacteria in the fœtal sac: it was found sterile and in a thoroughly aseptic condition.

As our knowledge of the subject increases, indications for operation will become more clear and fatal results less in number. The choice of a method of operation based upon the pathology of each individual case will always be of paramount interest and importance to the obstetrician.

PROFESSOR DA COSTA'S VALEDICTORY.

THE graduating class of 1891 of the Jefferson Medical College enjoyed a unique privilege; they received in an especial and personal sense the deeply significant valedictory of the teacher who for nineteen years had faithfully and brilliantly taught his pupils and the world the mysteries and cure of disease. The address breathes throughout a spirit of almost pathetic tenderness and solicitude for the individual student and worker in medicine, but below all other notes there is the clear, strong, dominant tone of love for medicine in the abstract, for the healing of the world's diseases, and the forefending of the world's ill. In these days, when the old-time courtesies are so apt to be neglected in the furious battle for worldly success; when scientific aims are pursued in disregard of a desirable respect for one's self and one's fellows; when manner and method are forgotten in pursuit of objects and things; when professional success is often prized more than professional ethics, how grateful seem the following words from one who has reached the highest and most honorable success, both worldly and professional:

"As men, I know you wish what all men wish—for friends, for esteem, for worldly success. Yet, if even all these were granted to you, you would not be satisfied, unless with them you had the approval of your conscience in your work. There will be dark days to you, as there will be joyous days; and in those dark days the feeling that you have done right, that you have striven manfully to the best of your ability, that no one has suffered whom you could have relieved, that no life has been lost which greater care could have saved, will be a joy. And the faithfulness and the care are not only of use to those in whose behalf they are exerted, but they also become a help to others, stimulating them to the same. Thus the humblest, the least gifted, may strengthen the resolves of the most self-reliant, the most gifted. One life reacts on another—its good increases the good in others. . . .

"Only let the fire of science burn within you as a vestal fire. If you do, it will not only benefit others, but will benefit you. When discouraged by drudgery and by long waiting for opportunity; when chilled and choked by battling with pretentious commonplace; when awe-stricken with the power of dense, invincible dulness, it will glow, if you fan it, and warm and cheer you. It has been kindled by a divine spark, and cannot go out while you are true and honorable and keep it alive for pure purposes."

To himself, the teacher *par excellence*, his own words have especial application, and in him striking exemplification:

"If you lead a teacher's life you must accept with it a teacher's duty. One of his duties is to hand down the best traditions of medical life, and to try to do that which in time will add to them. He will, then, not simply instruct; he will do more, he will educate. He must also foster investigation, and be himself an investigator. His love for learning must never weaken: when he ceases to be more than an elder student, he ceases to be fit to be a teacher. A teacher's work does not die with him. It lives long after, and may give great results. . . .

"Through his pupils a teacher lives; the man passes away, the teacher remains in his pupils and becomes part of them. What a thought that they, the lenient judges of his endeavor, the pledges of his aspirations fulfilled, the subsisting signs of his responsibility, transmit his life! What a thought that through them he may influence action for more than one generation; that from his impulse may spring what is far above himself! . . .

"What a stimulus, then, all this is to him who has the aspiration to instruct! And when the hour comes that I shall lay down this robe of teaching, when the time arrives that I address you no more, there will always remain the thought—I say it in all humility—that I shall live in you. I shall be with you in your struggles, shall share with you your successes. At every bedside of distress, at every bedside of hope, we meet again. The teacher is inseparably joined to you, to all his pupils. Awful, ever-present responsibility—constant excitant to truthful arduous effort; and happy he who has been so guided that he has never forgotten his responsibility nor relaxed his exertion; that he has used God's gift of teaching for God's purposes."

WORSE THAN VIVISECTION.

THERE are few things occurring in our modern life more fitted to give one severe moral nausea

than the outrageous facts, none too plainly exposed by a writer in the April number of *The Nineteenth Century*, in a description of the hideous agonies suffered by cattle during their transfer from their prairie homes to the English abattoirs. It is plain that, far from exaggeration, the worst part of the matter is touched as lightly and with as little insistance as possible. It would seem impossible that men and women with the faintest remnants of humanity and kindness yet remaining in their hearts, would, for the saving of a paltry penny or two per pound in their purchase of meat, command such things to be done. But apart from these aspects of the question, one cannot forbear asking what may be the physiological effect of such meat upon the human organism. If the milk of an angry human mother or a sexually excited cow will, in a child, produce very serious illness, what may not be the effect of the eaten flesh of these animals, beaten as they have been, bruised, starved, trodden to death, stifled, the whole organism every moment for weeks a quivering mass of fever, pain and passion? The writer of the article in question thus closes his story:

"It was found impracticable to fatten up range cattle on their arrival in England, and, after a few days' rest, to allow them to recover from their fevered condition: all these cattle were sold for immediate slaughter. They were fat when they left the range; at the end of their month's journey they were not only reduced to mere frames, gaunt and narrow beyond belief of people who have seen cattle only in the fields and farmyards of England, but with their sterns rubbed raw and swollen out of all natural shape, their legs also swollen, and in many cases raw around the fetlocks, and with their hides scored with horn-marks. When one considers the amount of bruising which these external marks represent and the way in which steers had been thrown about in the pens by the motion of the vessel, it is difficult to suppose that any of the little beef that is on them can be healthy human food. I can only suppose it is made into sausages."

It is greatly to the credit of our Government that the Secretary of Agriculture has issued the most stringent and detailed orders, which to some extent, will lessen the horrors of the ocean passage.

FOOD, MORTALITY, AND A PROTECTIVE TARIFF.

PROFESSOR ALBERTONI, of Bologna, demonstrates that there is an intimate and causal relation between the price of food and mortality. In Europe during the past fifty years vegetable foods have increased in price about 30 per cent., whilst meat has increased 140 per cent. The poor, eating less meat, have less resistance to disease than the better classes. A great number of boys in Turin were weighed, and the poor boy of fourteen weighed about the same as the well-to-do boy of eleven and one-half years. The greater mortality of the poorer classes is clearly traced to insufficient nourishment.

And now comes MR. MATLEKOVITS, who, in a statistical study on the subject, finds, as a result of the protective tariff rates of Austria and Germany, that in these countries the poor man's cereals, his flour and rye bread, have, since 1878, been advanced in price one-third or more. As a result, there is increased mortality and a great increase of crimes both against property and the person.

DOMESTIC SCIENCE AT WELLESLEY COLLEGE.

IT has always seemed that a work upon which so much human happiness and well-being depend, and, moreover, a work necessarily devolving upon women, should in female colleges be left to haphazard and whim, instead of being converted into a science and an art. Girls are taught everything but the one important and necessary thing they must do all their lives. Wellesley has at last seen the absurdity and met it by establishing a department of Domestic Science. Although it is only an optional year put at the end of the course, it is still a good beginning in a good work. The lectures cover such subjects as the sanitary conditions of a house, the chemistry of food, cooking, nutrition, proper clothing, the art of housekeeping, domestic economy, etc.

A FOUR-YEARS' COURSE AT THE HARVARD MEDICAL SCHOOL.

HARVARD College has decided to lengthen her course of medical study from three to four years, each of nine months' study. The change will go into effect September, 1892. It is thought that a similar change is under consideration in New York, and if decided upon, the simultaneous action in the three principal cities of the East will, it is hoped, annihilate the two-years' course throughout the country, and spur even the worst laggards to the adoption of a three-years' course, thus greatly advancing the interests of a sound education. American medical education will then cease to be the target of European ridicule.

SOCIETY PROCEEDINGS.

MEDICAL SOCIETY OF THE STATE OF PENNSYLVANIA.

Forty-first Annual Meeting, held at Reading, June 2, 3, 4, and 5, 1891.

[Continued from p. 649.]

WEDNESDAY, JUNE 3D.—SECOND DAY.

THE afternoon session was devoted to the subject of Phthisis. DR. T. J. MAYS, of Philadelphia, read a paper upon "The Treatment of Pulmonary Consumption." He opposed the view that houses in which consumptives have lived are centres of infection, and that the commingling of consumptives is detrimental. He does not believe that consumption is propagated by contagion. He advocated the non-specific or rest treatment, which, when thoroughly carried out, gives excellent results. No chronic disease responds more quickly and satisfactorily to proper treatment than does pulmonary consumption.

DR. HUGH HAMILTON, of Harrisburg, followed with a scientific paper on the "Physiological Behavior of Koch's Remedy," which was illustrated by numerous charts. DR. C. W. DULLES, of Philadelphia, cited instances demonstrating the curability of phthisis, and dwelt upon the importance of treating phthisical patients in suitable institutions. DR. L. F. FLICK, of Philadelphia, insisted upon the value of the specific treatment. He has been using inunctions of iodoform dissolved in olive oil, with most gratifying results.

A resolution, presented by W. B. Ulrich, of Delaware County, authorizing the appointment of a committee of seven to urge the passage by the Legislature of a bill for the appointment of a Board of Medical Examiners, and appropriating $200 for the expenses of the year, was adopted, and the following committee appointed: Dr. H. G. McCormick, Wyoming; Dr. J. B. Roberts, Philadelphia; Dr. W. S. Foster, Allegheny; Dr. W. M. Weidman, Berks; Dr. C. L. Stevens, Bradford; Dr. J. C. Gable, York; and Dr. J. W. Moore, Northampton.

The Committee on Nominations proposed the following officers for the ensuing year, all of whom were unanimously elected: President, Dr. Samuel L. Kurtz, of Reading; Vice-Presidents, Dr. John B. Roberts, of Philadelphia, Dr. H. G. McCormick, of Williamsport, Dr. H. H. Whitcomb, of Norristown, and Dr. J. C. Gable, of York; Secretary, Dr. W. B. Atkinson, of Philadelphia; Assistant Secretary, Dr. Charles W. Dulles, of Philadelphia; Treasurer, Dr. George B. Dunmire, of Philadelphia. Delegates to attend the meetings of the various medical associations were also elected. The next meeting will be held at Harrisburg, the third week of May, 1892.

THURSDAY, JUNE 4TH.—THIRD DAY.

At the morning session, after the election of a Board of Censors, DR. ALLIS read an address, rich in valuable suggestions, on "Problems in Surgery." He regarded the general practice of operating during shock following injury as wrong. The patient should be permitted to react before any additional risk be incurred by adding to the existing shock.

In injuries of the foot requiring amputation, he advocated removal of the limb just below the knee, in preference to operation upon the foot. He claimed that an artificial limb is of more service than a natural heel. In the treatment of fracture of the neck of the thigh-bone in old persons, the patient should be taken out of bed as soon as possible, and treated as if no fracture existed. In case of the division of a nerve or artery, he suggested the possibility of suture. In the treatment of hydrocephalus or abscess of the brain, he advocated the removal of a section of the skull, and after the evacuation of the fluid the application of a bandage to produce pressure. He would prefer to remove the fluid of hydrocephalus by means of diuretics rather than resort to tapping. This principle of compression in the treatment of abscess cavities would in cases of phthisis apply also to the lungs; he suggested the advisability of resecting the ribs of the affected side, with subsequent application of gentle pressure by means of straps.

DR. PACKARD thought it would be impossible to make it a fixed rule, in all cases of injury of the foot, to amputate below the knee; excellent results can be obtained by preserving the heel, and he would always make an effort to do so. In fracture of the neck of the femur, he has had excellent success from treatment by extension. He believes that aneurism would result from the suturing of divided vessels.

DR. M. PRICE did not believe in waiting until shock is recovered from before operating, save in extreme cases. In injuries of the foot he strongly advocated amputation below the knee. He believed the day is approaching when the skull will be opened to remove clots in apoplexy, as well as to evacuate the contents of abscesses.

DR. E. E. MONTGOMERY, of Philadelphia, read a paper on "Conditions Requiring Abdominal Section Following Parturition." Septicæmia after labor from the formation of pus has caused many deaths. In all such cases he urged early surgical interference, as the most gratifying results follow laparotomy and drainage. A small dermoid cyst of the ovary which has undergone bruising, or has been ruptured by the pressure of the head, is a frequent source of septicæmia. Another frequent cause is the incomplete removal of the membranes, placenta, and clots—which, if not remedied, will result in metritis and inflammation of the peri-uterine tissues, with formation of an abscess. In all septic cases he recommended careful examination of the condition of the uterus; dilatation and thorough curetting of the uterine cavity; when evidences of pus are present, opening the abdomen, cleansing the peritoneal cavity, and drainage. When no source of infection can be detected, an exploratory incision should be made, with puncture of the ovaries, if enlarged, to determine the presence or absence of pus. If the uterine wall is the seat of an abscess, the organ should be removed.

DR. EDWARD JACKSON, of Philadelphia, read a paper on "What to Do for Incipient Cataract." He dwelt upon the influences to which the eyes are exposed in various trades, such as blacksmithing, puddling, and glass-blowing, and recommended the use of dark glasses by those exposed to great heat and brilliant light.

DR. J. A. LIPPINCOTT, of Pittsburg, delivered the address in Ophthalmology, chosing as his theme the subject of "Trachoma," an affection largely prevalent in

orphan asylums, public institutions, and among emigrants.

At the afternoon session DR. J. M. DUFF, of Pittsburg, read the address in Obstetrics. He paid a glowing tribute to the value of asepsis in parturition. A putrefying funis may cause septicæmia in both mother and child, and is frequently the cause of trismus in the latter. Antiseptic treatment of the cord is therefore insisted upon. He objected to the eliminative treatment of septicæmia by means of subcutaneous injections of pilocarpine and large draughts of sterilized sodium chloride solution, as apt to give rise to cardiac collapse. When this method of treatment is adopted it should be supplemented by the use of strychnine. The wet pack is the rational treatment for this condition. The diagnosis of placenta prævia is to be made by external palpation. The Braxton-Hicks method is the best. Post-partum hæmorrhage is best treated by hydrastin, hypodermatic injections of caffeine, and packing the vagina with iodoform gauze. When transfusion is demanded, the injection between the scapulæ of a salt solution, one drachm to a pint, will answer perfectly. In rupture of the uterus, laparotomy is indicated. The curette should never be used after abortion. The placental forceps or the index finger are proper. He called attention to the fact that la grippe had caused a great increase in the number of abortions during this year.

DR. S. SOLIS-COHEN, of Philadelphia, read a paper on "Patent Medicines and Newspapers." He forcibly denounced the popular method of advertising proprietary medicines in daily and other journals, and called upon the editors of such papers to assist in eradicating this palpable evil. He claimed that many a patient has suffered not only an aggravation of his condition but has been hastened into the grave as a result of adopting some method of treatment recommended in the newspaper advertisements.

A paper by DR. C. R. EARLE on "Catarrh" was followed by a paper on "The Pharmacology and Therapeutics of Euphorbia Pilulifera," by DR. JOHN AULDE. Dr. Aulde dwelt largely on the benefit following the use of this drug in cases of asthma and other bronchial affections.

An amendment to the constitution to prevent the publication in the medical journals of abstracts of the addresses read before the annual meeting before the appearance of the *Transactions* of the Association, was defeated on the ground that the interest in the papers would be dead by the time the *Transactions* was published.

FRIDAY, JUNE 5TH.—FOURTH DAY.

The last session of the annual meeting was occupied in the discussion of business matters, no scientific paper being read. The retiring President, Dr. Craig, announced the following appointments:

Committee to visit the Governor and urge the appointment of a female member to the Board of Public Charities in case a vacancy should occur: Dr. W. B. Ulrich, Dr. E. Corson, Dr. S. C. Ayres, Dr. S. J. Raus, and Dr. J. L. Ziegler.

Committee on Pharmacy: Dr. H. A. Hare, Dr. C. W. Bachman, Dr. J. C. Lange, Dr. W. T. Bishop, and Dr. T. J. Mays.

To deliver addresses at the next meeting: On Medicine, Dr. J. H. Musser, Philadelphia; on Surgery, Dr. T. D. Davis, Allegheny; on Mental Diseases, Dr. J. W. Phillips, Delaware; on Obstetrics and Diseases of Children, Dr. H. G. McCormick, Lycoming; on Hygiene, Dr. A. A. Woods, Erie; on Otology, Dr. G. R. Rohrer, Lancaster.

Dr. Craig made a brief address on surrendering the chair to the incoming President, Dr. Samuel L. Kurtz, of Reading, who in a graceful manner expressed his thanks for the honor conferred, saying that he accepted the office as a compliment to the medical profession of Reading and of Berks County.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, April 7, 1891.

B. SACHS, M.D., IN THE CHAIR.

THE PATHOLOGY OF LANDRY'S PARALYSIS.

DR. HENRY HUN, of Albany, reported the case of an unmarried man, forty-five years old, free from syphilitic or rheumatic taint, who suddenly observed paresis of the legs, which, in the course of four days, progressed to complete paralysis. Following this, the muscles of the trunk, arms, and parts supplied by the bulbar nerves became paretic in the order named, the loss of power becoming more and more decided, until death occurred with the symptoms of bulbar paralysis. The paralysis was purely motor, the sensory nerves not being involved; neither were the sphincters, although paralysis of the abdominal muscles made expulsion of the contents of the viscera difficult or impossible. The only lesions found by careful microscopical examination were the evidences of cerebral and spinal meningitis of recent origin, and a degeneration of some of the fibres of the anterior roots of the cauda equina.

After a careful consideration of the diseases of the nervous system most nearly resembling Landry's paralysis, the conclusion was reached that no evidence had been brought forward which justified the abandonment of the term "acute ascending" or Landry's paralysis. It had not been shown that the cases of the disease, in which no lesion had been discovered, depended on faulty methods of examination, nor had any case clinically typical of Landry's paralysis been reported in which, after death, characteristic lesions were found, either in the central or peripheral nervous system. Acute ascending paralysis, excluding cases in which sensory symptoms were prominent, or in which well-marked bulbar symptoms were absent, must, therefore, be regarded as a clinical entity for which no characteristic lesion has as yet been discovered. That there was some change in the nervous system causing the severe symptoms could not be doubted, but this change was probably of a chemical rather than of an anatomical character. From the many points of resemblance between acute ascending paralysis, myelitis of the anterior horns and multiple neuritis, this chemical change must affect either the motor cells of the spinal cord and medulla or the fibres springing from them; and although this chemical change is so great as to cause an entire arrest of the functions of these cells or fibres, yet it leaves no trace in alteration of character of cell or fibre, no more than does morphia or

strychnia leave in the structure of the nervous system any trace of its fatal action. As to the nature of this supposed chemical poison nothing is known. The general tendency of the present day is to consider it a ptomaine, and indeed the acute course, the fact that it often follows an infectious disease, and that it is associated with enlargement of the spleen, makes it not improbable that Landry's paralysis is a germ disease. In further support of this view is the fact that Centanni and Eisenlohr have each found bacteria in the central nervous system. In neither case were the bacteria cultivated. The case of Centanni was so imperfectly observed during life that the diagnosis was doubtful. In a number of cases, bacteria have been looked for, but were not found, so that the hypothesis that Landry's paralysis is due to bacterial agencies is far from being proven, and the pathology of the disease still remains to be discovered.

DR. IRA VAN GIESON thought Landry's paralysis much more closely associated with cases of acute multiple neuritis and acute poliomyelitis than is generally supposed. Landry, in 1859, first accurately described several cases of ascending paralysis, although several observers had previously referred to the existence of such a disease. The speaker referred to several cases of acute multiple neuritis which have been reported, in which motor symptoms predominated, and in which the whole course of the disease had been in close accord with that of Landry's disease. He also reported several cases of acute poliomyelitis which very closely resembled the disease in question. The clinical resemblance of these diseases is striking. It is well known that multiple neuritis and poliomyelitis are usually caused by poisons of different kinds, such as the ptomaines resulting from the infectious diseases and from phthisis. Etiologically, Landry's disease seemed to come under the same category as these two diseases. Before a definite conclusion as to the true pathology of Landry's paralysis could be arrived at, a more thorough examination of all the nerve trunks, their branches and terminal filaments would have to be made. Hitherto, such observations had been unsatisfactory, because, for obvious reasons, all the nerves could not be examined. On this account, it should not be concluded that the peripheral nerves are not diseased in Landry's paralysis, as thorough examination may reveal the existence of such a condition. As to the hyaline thrombosis found in the central nervous organs, similar formations follow ptomaine-poisoning, but are not confined to cases of Landry's disease, as they may be present in any case of poisoning.

DR. LEONARD WEBER, some six years ago, reported a typical case of Landry's disease, in which the patient entirely recovered in the course of three months. The symptoms of the disease appeared after a shock sustained in stopping a runaway horse. Dr. Weber did not think that the trauma militated against the theory of intoxication. He was satisfied that if a more thorough examination of the nerves were made in these cases our ideas of the pathology would become more clear.

DR. M. A. STARR thought it a question whether or not the disease was of sufficient duration to be attended with neuritis and degeneration of the peripheral nerves. It is certain that a myelitic process might cause a suspension of function, without causing recognizable microscopical changes. He had never seen a typical case of Landry's paralysis, but had seen two cases which presented many symptoms of the disease. One was manifestly a case of diphtheritic paralysis, the other a case of beri-beri.

TENNESSEE STATE MEDICAL SOCIETY.

Fifty-eighth Annual Meeting, held in Nashville, April 14, 15 and 16, 1891.

DR. T. J. HAPPEL, of Trenton, said, concerning "Abscesses," that so far as the treatment of the last stages goes, the Latin expression *ubi pus, ibi incisio*, gives us the therapy of such cases in a few words. The prophylactic treatment is a different matter. Everything that can be done to prevent the formation of pus, and the development of an abscess, must be resorted to, but when pus is present the knife is the instrument of relief. An aspirator can remove the pus itself, but the cause of it, the pyogenetic something, is left behind. A free outlet must be given to the pus, the cavity carefully cleaned, perfect drainage secured, arrangements made for thoroughly flushing the diseased part with antiseptic fluids, the strength of the patient maintained by a generous diet, and Nature aided by an abundance of pure, fresh air to repair the broken-down constitution.

DR. HAPPEL reported a case of "Abscess of the Spleen." He said this was a rare disorder, many of our best authorities never having met with a case. He had in the course of seventeen years' practice found two cases; one due to pressure upon the organ, and the other to chronic malarial poisoning. He called attention to the peroxide of hydrogen as one of the best, if not the best, of all agents, to cleanse and restore to a normal state all pyogenic membranes, surfaces and cavities. As one writer expressed it: "It hunts out pus in all its ramifications as a ferret does a rat."

After giving a *résumé* of the literature on the subject of "Ovulation and Menstruation," DR. GEORGE R. WEST, of Chattanooga, drew the following conclusions:

1. That the increased familiarity with the pelvic organs, the result of modern surgery, has not materially added to our knowledge of their functions.

2. That though the ovular theory of menstruation has not been overthrown, yet the weight of accumulating evidence seems against it.

3. That the most recent observations point to a common nervous origin for both ovulation and menstruation, and yet an individual independence.

DR. THOMAS M. WOODSON, of Gallatin, contributed a paper entitled "Treatment of Pneumonia; the Past and Present Methods; has the Rate of Mortality been Changed?"

He briefly reviewed the literature on pneumonia to illustrate the opinions of medical teachers and writers. He was glad that Hare, of Philadelphia, in his work on *Practical Therapeutics*, revived the old lines of treatment. He extolled veratrum viride, and said that in the first stage of the disease it is very useful. Its two alkaloids exert different influences and between them they fulfil every object sought for. Jervine, a powerful vasomotor depressant, relaxes the walls of the blood-vessels everywhere; at the same time it quiets the action of the heart by an action upon its muscle or ganglia, reducing its force, thus preventing engorgement of the

lung; while veratroidine, by stimulating the inhibitory nerves of the heart, also slows its beat, fills the ventricles and allays excitement. The advantages of veratrum veride are its completeness and rapidity of action; the fact that it preserves in healthy bloodvessels the blood which may be needed in the crisis, if the disease is not aborted; and its safety is a point largely in its favor. In the second stage, to prevent heart failure by engorgement from over-distention, Dr. Hare, to stimulate the respiratory centres, gives digitalis with strychnine. He thinks alcohol in the second stage is inferior to digitalis, and that carbonate and muriate of ammonia are valuable adjuncts in the second and third stages. For troublesome cough in the later stages he uses opium sparingly, but not in the first stage.

In the first stage of croupous pneumonia the indications, said the speaker, are clear: 1. To control the circulation and diminish the determination of blood to the lungs. 2. To reduce the temperature, if high. 3. Allay pain by both physical and physiological rest. 4. Support the vital powers.

The first two indications are met by veratrum veride better and with more certainty than by any other drug. For the third, to allay pain, we have but one remedy—opium or its derivatives, which stand without rivals. Fourth, to support the patient with especial reference to failing heart and respiratory centres; digitalis, strychnine and alcohol for the later stages.

More than twenty years ago, the speaker expressed the opinion that in inflammatory affections veratrum viride was a sedative of the greatest value, controlling the action of the heart as effectually as blood-letting, without the exhaustion incident to the latter. Arterial excitement is reduced by it, while the vital forces are economized. It is especially adapted to pneumonia in the stage of engorgement in which it appears to bring about prompt resolution. It may with safety be used in the treatment of children. Its constitutional effects having been secured, there are reduced force and frequency of the circulation, reduction of temperature and respiration and an amelioration of all the symptoms of the disease. While extolling the virtue of veratrum viride, he would not rely on it alone in pneumonia, as opium was unquestionably entitled to a prominent place palliative and curative in its action, allaying pain, cough, and nervous irritation, and available in the latter as well as in the early stages.

DR. J. S. CAIN, of Nashville, said that "Chronic Endometritis" and the conditions necessarily allied therewith are the most common as well as the most important diseases with which the gynæcologist has to deal. This condition is often a sequel to the acute form of the disease, and grows out of repeated acute attacks. It matters not how or from what source the acute outbreaks originate, whether from catarrhal, specific, traumatic internal or constitutional causes, they are often, but not always, the starting-point from which not only the endometrium but the entire uterine and peri-uterine parenchymatous structures become involved. He would here venture the assertion, that while the changes in structure and function of the lining membrane of the uterus often seem to be the most prominent conditions, and those demanding first and most careful attention, this tissue is probably never chronically diseased without a corresponding involvement of all the uterine structures. As to treatment, while the curette, as has been said, is a blind instrument and capable of doing harm in careless and incompetent hands, yet for the removal of fungoid vegetations and adenoid degenerations from the endometrium, it affords the surest, speediest and safest means yet devised. Dr. Cain is accustomed to following the curetting by an application of Churchill's tincture of iodine or diluted carbolic acid, as is the usual practice, and always precedes the treatment by a careful washing out of the vagina and uterus with corrosive sublimate, 1 : 2000.

In cases in which this treatment is not admissible, or when it has failed to afford relief, his next reliance is on the method of Apostoli. This consists in the introduction into the uterine cavity of an electrode insulated to near the point, and connected with the negative pole of the battery, the other pole being connected with a large pad of moistened potter's clay, sponge, or prepared cotton, placed over the abdomen. The current should be employed for from ten to fifteen minutes, about twice a week. The strength of the current will much depend upon the acuteness of the particular case and the susceptibility of the patient to electrical treatment. The chronic cases always require stronger currents. The dosage may be fixed at from ten to three hundred milliampères; in his judgment the minimum is too small to accomplish any good results, and yet physicians with much large experience have had to employ it.

This line of treatment he considers free from many of the objections of others; it is cleanly, free from pain, and exempt from danger. Unlike cauteries and escharotics, it can be limited in its influence, and produces no deleterious effects upon the sound tissues, nor does it, like the curette, leave a raw and exposed surface, to absorb poisons and aseptic matters; while it removes the vegetations it imparts renewed tone and vitality to the diseased organ.

DR. A. J. SWANEY, of Gallatin, contributed a paper on "Retained Placenta in Miscarriage: How Shall We Treat Such Cases?"

He said the dangers fom retained placenta in miscarriage were hæmorrhage and septicæmia. When the delivery of the placenta is protracted, ought we still to abstain? Ought we to wait, or interfere actively in order to forestall these dangers which will almost certainly result? Those who favor active interference are Tyler, Smith, Murray, Simpson, Leishman, Mundé, Grandin and many others. The reasons given for active interference are the frequency of these dangers in protracted delivery of the placenta. If the cervix is dilated or patent, Simpson directs immediate interference; if it is not dilated, he dilates it at once. The woman is then anæsthetized, the uterus depressed as much as possible by one hand externally, and with the index finger of the other hand he removes the placenta and membranes. If he cannot sufficiently depress the uterus with the hand, he does not hesitate to forcibly drag it down with a double tenaculum fixed in the cervix. Mundé and Grandin go still further, and curette the cavity of the uterus with special instruments made for the loosening of adherent placenta and its removal from the uterus.

The authorities who before interfering counsel waiting for serious complications are just as numerous as

those who advise immediate interference. We mention Ramsbotham, Davis, Burns, Fleetwood, Churchill, Grailey Hewitt and many others. Active intervention does not mean unnecessary interference. Nature is always to be given a chance, but when her efforts are futile, it is but rational to assist her, and this should be done as directed by Mundé—by placing the woman in the left lateral position, and with a dull wire-curette through a Sims speculum removing the placenta or any part of the secundines that may remain. This is far better and easier than the method advised by Simpson of dragging or pressing down the uterus and introducing the finger. The uterine cavity should then be washed out with hot water, slightly carbolized, through a Jameson uterine douche, and this should be repeated every six or eight hours until all fœtor disappears from the lochial discharge.

Hæmorrhage after miscarriage, said the speaker, even when we believe the placenta and secundines have been removed, invariably means retention of a part of the placenta or secundines. Profuse hæmorrhage from this cause may occur for weeks; in such cases we should boldly explore the uterine cavity and remove any offending matter that may be present. In the first twelve weeks of pregnancy, the dangers from hæmorrhage and septicæmia are not so great and the expectant plan is more justifiable. After the third month, it is criminal negligence to wait and subject a woman to the dangers arising from retained placenta, when she can be relieved by an operation, which, if properly done, can do no harm and spares her the risk of hæmorrhage and septic poisoning. In short, the author believing the early removal of the secundines is easy and safe, forthwith guarantees the woman against the dangers of hæmorrhage and sepsis.

DR. J. L. JONES, of Bells, read a paper entitled "Indigo as an Emmenagogue."

His first case was a lady, twenty years of age, who had not menstruated in five months. He had been treating her for three months with the usual remedies, without any effect; he therefore made up his mind to give indigo a trial. He ordered two ounces of indigo and half an ounce of subnitrate of bismuth, well mixed. Of this the patient took one-half teaspoonful, in one-third of a glass of water, three times daily, for nearly four weeks. One day he was sent for in great haste. On his arrival, he found the patient in bed and comfortable. He was told by the mother that her daughter, while walking in the garden, without pain or warning of any kind, began to flow. The gush was followed by a gentle flow, which lasted for only a short time. In five days she was well, and has not suffered from amenorrhœa since. Dr. Jones has since used indigo in thirteen cases, with but one failure, and this proved to be a case of pregnancy.

During the administration of the drug the os uteri becomes soft and patulous, admitting the end of the index finger. There is often a serous discharge from the vagina. The urine becomes brownish-green in color, and its odor bad. The stools are watery and offensive.

Dr. Lasser.—The order of the French Legion of Honor has been conferred upon Dr. Lasser, the General Secretary of the Tenth International Medical Congress.

CORRESPONDENCE.

THE VOTE OF THE MISSOURI STATE MEDICAL ASSOCIATION ON THE THREE-YEARS' COURSE.

To the Editor of THE MEDICAL NEWS,

SIR: Believing that the readers of THE MEDICAL NEWS will be interested in following the struggle for reform in medical education that is going on in this State, I take the liberty of sending a statement of the attitude of the Missouri State Medical Association upon the question. It had been denied that the State supported the more progressive schools in their desire to make the term of study more thorough in accordance with the greater demand upon the practitioner of medicine. At its late session (May 20, 1891), the State Association indorsed the three-years' obligatory course by a practically unanimous vote. The only visible opposition came from a college recently organized in St. Louis, making the *eighth* in this city. When we consider the fierce competition for students sure to arise among such a throng of colleges in one city, the reason why the last comer desperately opposes increasing the length of the term of study becomes apparent. Hence, the denunciation of such conduct by Secretary Rauch, of the Illinois State Board of Health, as dishonorable, unprofessional, and mercenary. Much indignation was expressed over the failure of the Three-years' Bill in the Legislature. Its passage was unanimously recommended by the committees of both Senate and House. The House gave a large vote in favor of it, but the Senate, at the last moment, voted adversely. It was plainly a manipulated vote, and in the teeth of the will of the people.

The outcry of "oppression of the poor young man," as an argument against three years' study, was ridiculed as pure demagoguery—familiar enough in stump speeches, but disgraceful when used by "professors" to obstruct necessary reform in education. May we not ask since what exact date have the youths of America become paupers and demand charity at our hands, even at the expense of suffering humanity, whose anguish they volunteer to study to relieve? It is a slander upon our young men to accuse them of such cowardice and lack of self-respect. It is a crime in the light of our day to try to mislead them as to the true nature of the task they undertake when beginning a medical course. Every intelligent physician knows that medicine can only be learned in the laboratory and clinic—it is a question of time as well as of brains. Three years spent in practical work, under the direction of competent teachers, is little enough time even for the most diligent and gifted students. Were thoroughness of training more generally appreciated in America, we should not at this late day be arguing for a three-years' course in medicine. There is an alarming waste of talent in America from lack of early and sufficient training. As a cure for the evil of badly educated doctors the establishment of State Examining Boards is urged. We must note, first of all, that such a scheme, to be successful, must include restrictions upon the candidates for examination. The Boards cannot have their time wasted by examining all who apply, irrespective of proofs of fitness. In Germany the State Board requires of candi-

dates that they do practical work; that they dissect, demonstrate specimens, take charge of cases—medical, surgical, and obstetrical—writing out the records, etc. The candidate, also, must have already had years of elaborate training. This is the ideal state of things. No wonder Germany is looked upon as the centre of medical science. We cannot hope to attain such perfection in the present, but we can move in that direction, and a long step would be to require of all candidates that they show proof of having taken a graded course of study extending over a term of not less than three years, and in a reputable college; *i.e.*, one having sufficient laboratory and clinical facilities and a competent corps of teachers. Such proof will guarantee that the student has done so much practical work, and will exclude from the examination men who have specially crammed out of books, and who, in a merely verbal or written examination, might make a fair show without having any practical knowledge at all. Yet, as everyone knows, it is just this practical knowledge that makes the doctor.

New York has lately created a State Board of Examiners entirely removed from political influence, and its further efficiency is insured by requiring of applicants for examination that they shall have studied three years in some legally incorporated college. Eight other States make the same condition. In time we hope all the States will have efficient Boards, but there must first be a solid organization of the profession in all the States to insure satisfactory appointments on the Boards. Missouri does not yet possess such an organization throughout all its districts. The State Association is laboring to that end. Respectfully, C. A. TODD, M.D.

ST. LOUIS, MO.

ACONITE IN ACUTE NEPHRITIS.

To the Editor of THE MEDICAL NEWS,

SIR: On the 21st inst. I was called to see a young married woman, about three months *enciente*, who had been suffering severely for five days with lancinating pains in the region of the kidneys, more particularly of the left. She had passed almost no urine during all that time—what little she had passed looked more like gelatinous mucus tinged with blood than urine. It is strange that the thermometer went up only to 102°. She was quite thirsty, however, and very restless, crying out with agonizing pain all the time.

I gave her Flemming's tincture of aconite, six drops in a glassful of water every three hours, with directions that it be kept up until tingling numbness should be felt, unless relief were obtained short of that effect; but to be discontinued if that effect should be produced, until it had passed off, then to be resumed again if needed. I also had plain hot-water stupes applied over the kidneys, and gave a vegetable cholagogue cathartic. The stupes immediately proved soothing, and the remedies promptly began to relieve all the symptoms. In about twenty-four hours she was entirely relieved and passing plenty of healthy urine. D. W. FOSTER, M.D.

PLAISANCE, LA., May 28, 1891.

NEWS ITEMS.

Michigan State Board of Health.—The annual meeting of the Michigan State Board of Health was held at the Capitol, April 14, 1891. Prof. Fall, Drs. Avery, Hazlewood, Vaughan and Baker were present. Dr. Avery was reëlected president.

Dr. Vaughan reported that, at the State Laboratory of Hygiene, he had made analyses of all the different kinds of baking powder found in the market, also of 112 samples of water from different parts of the State, and that he was ready to report the results, with those of his researches on typhoid fever.

Dr. Baker reported that he had worked out the cause of influenza. He said its greatly increased prevalence during the last three months is alarming because so many other diseases follow that disease, and increase after it increases. Those which so increase are consumption, pneumonia, cerebro-spinal meningitis, rheumatism, osteo-myelitis, etc. Influenza seems to bring in its train all of the most important diseases. Dr. Baker explained the causation of influenza. He stated that the germs of influenza are generally, or at all times, present, and the germs of pneumonia, tuberculosis, and of the other specific diseases are somewhat widely disseminated, but that there must be certain coincident meteorological conditions to irritate the throat and air-passages sufficiently to let the germ gain an entrance to the body. These meteorological conditions, in this instance, were the excessive prevalence of north and northeast winds, and the excessive amount of ozone during the past three months. The prevention of influenza and of the coincident frequency of other more dangerous diseases has not been possible because of ignorance of the causes. Now the causes are known, and the study of the measures for the prevention can begin.

How to procure more thorough disinfection after contagious diseases was brought up by Dr. Hazlewood, also by a letter from Dr. Nicholson, of the Upper Peninsula, and by other correspondence of the office of the Board. It seems to be plain that if the bill now before the Legislature (Senate bill 257, House bill 640), making a small appropriation to enable the State Board of Health to send an inspector to the localities where one is most needed, to aid in the final disinfection after cases of infectious diseases, shall become a law, the spread of those diseases can be very greatly lessened, and hundreds, and possibly thousands, of lives can be saved in Michigan every year.

The Death-rates of European Cities.—The death-rate per thousand, for the year 1890, in Berlin, was 21.6; in Paris, 24.5; in Vienna, 24.6. Of twenty-two of the larger European cities, Stockholm had the lowest rate, 19.6; then followed London, 20.3; Christiania, 21.1; Brussels, 21.5. The highest rate existed at Munich, 30; Budapest, 31.4; and Moscow, 40.3.

THE seventeenth annual session of the Mississippi Valley Medical Association will be held at St. Louis, October 14, 15 and 16, 1891. An invitation to attend the meeting is extended to the members of the medical profession.

Dr. Samuel O. L. Potter, M.R.C.P.—Dr. Potter, of the Cooper Medical College of San Francisco, has lately had conferred upon him the degree of Member of the Royal College of Physicians of London. Professor Osler, of Baltimore, and Dr. Robinson, of San Francisco, are said to be the only other Americans holding the degree.

Lehigh Valley Medical Association.—The eleventh annual meeting of the Lehigh Valley Medical Association will be held at Mauch Chunk, June 25, 1891. Dr. Howard A. Kelly, of Johns Hopkins University, will deliver the annual address. His subject will be "Injuries to the Vaginal Outlet."

Washington State Medical Society.—The second annual meeting of the Washington State Medical Society was held at Seattle, May 6th, 7th, and 8th.

The President, C. K. Merriam, of Spokane, read the Annual Address. Dr. E. E. Heg, of North Yakima, delivered the address in Anatomy; Dr. H. P. Tuttle, of Tacoma, the address in Physiology; Dr. N. Fred. Essig, of Spokane, the address in General Surgery; Dr. E. L. Smith, of Seattle, the address in Abdominal Surgery; Dr. J. B. Wintermeuth, of Tacoma, the address in Surgery of the Brain; Dr. C. H. Willison, of Port Townsend, the address in Genito-urinary Surgery; Dr. J. J. McKone, of Tacoma, the report in Obstetrics and Gynecology; Dr. T. V. Goodspeed, of Seattle, read a paper entitled "Do Maternal Inpressions Affect the Fœtus in Utero?" Dr. J. W. Waughop, of Steilacoom, on "Treatment of the Insane;" Dr. W. J. Redpath, of Steilacoom, on "Analgesia of the Insane;" Dr. G. S. Armstrong, of Olympia, "On the Existence of an Intellectual Centre;" Dr. C. W. Sharples, of Seattle, on "Increased Reflexes and Allied Phenomena;" and Dr. A B. Kibbe, of Seattle, on the "Importance of Free Nasal Respiration."

The following officers were elected for the ensuing year:

President, Dr. H. C. Willison, of Port Townsend.

Vice-Presidents, Dr. G. W. Libby, of Spokane, and Dr. H. P. Tuttle, of Tacoma.

Secretary, Dr. Elmer E. Heg, of North Yakima.

Treasurer, Dr. James B. Eagleston, of Seattle.

The next meeting will be held in North Yakima, on the second Wednesday in May, 1892, and continue for three days.

Massachusetts Medical Society.—The one hundred and tenth anniversary of this Society was held in Boston, June 9th and 10th. The programme included papers by Drs. Pierce, of Bernardston ("Typhoid Fever"); J. A. Jeffries, of Boston ("The Bacillus of Typhoid"); Withrington, of Roxbury ("Bright's Disease"); Thorndike, of Boston ("Catheter Fever"); F. H. Williams, of Boston ("How Shall We Nourish in Acute Disease?"), and many others. The Shattuck Lecture was delivered by Dr. Edward Cowles, of Somerville, and the annual discourse by Dr. James B. Brewster, of Plymouth.

The New Hampshire Medical Society will hold its annual meeting and celebrate the centennial anniversary of its organization at Concord, June 15, 16, and 17, 1891. An interesting programme has been arranged. In addition to the regular business proceedings, and the reading of medical, historical, and biographical papers, there will be an excursion to Alton Bay and an anniversary dinner. A cordial invitation of attendance is extended to the medical profession.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM JUNE 2 TO JUNE 8, 1891.

By direction of the Secretary of War, the leave of absence on surgeon's certificate of disability, granted SAMUEL M. HORTON, *Major and Surgeon*, in S. O. 49, March 4, 1891, from this office, is extended three months on surgeon's certificate of disability.——Par. 6, *S. O. 129, A. G. O.*, June 4, 1891.

By direction of the Secretary of War, VAN R. HOFF, *Captain and Assistant Surgeon*, is relieved from duty as a member of the Board of Medical Officers to which he was assigned by Par. 6, S. O. 78, April 7, 1891, from this office, and will, upon the completion of the duties assigned him by Par. 6, S. O. 110, May 14, 1891, from this office, return to his proper station, Fort Riley, Kansas. —Par. 11, *S. O. 126, A. G. O.*, June 3, 1891.

By direction of the Secretary of War, Par. 1, S. O. 74, May 22, 1891, Department of the Columbia, transferring JOHN D. HALL, *Major and Surgeon*, from Fort Canby, Washington, to Fort Sherman, Idaho, is confirmed.—Par. 4, *S. O. 126, A. G. O.*, June 3, 1891.

By direction of the Secretary of War, the extension of leave of absence on account of sickness, granted HENRY P. BIRMINGHAM, *Captain and Assistant Surgeon*, in S. O. 108, May 12, 1891, from this office, is further extended to June 21, 1891, on surgeon's certificate of disability.—Par. 6, *S. O. 125, A. G. O.*, June 2, 1891.

With approval of the Secretary of War, leave of absence for three months, to take effect on or about June 15, 1891, is granted DAVID L. HUNTINGTON, *Major and Surgeon*.—Par. 2, *S. O. 124, A. G. O.*, June 1, 1891.

KEAN, JEFFERSON R., *Captain and Assistant Surgeon*.—Is granted leave of absence for one month, to take effect after the return of Robert H. White, Major and Surgeon, to duty at Fort Myer, Virginia.——Par. 1, *S. O. 123, A. G. O.*, May 29, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JUNE 6, 1891.

GRAVATT, C. U., *Surgeon*.—Detached from Naval Hospital, Yokohama, Japan, and ordered home.

ROGERS, FRANKLIN, *Surgeon*.—Detached from special duty at Norfolk, Va., and ordered to Yokohama Hospital.

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE TWO WEEKS ENDING JUNE 6, 1891.

FESSENDEN, C. S. D., *Surgeon*.—Granted leave of absence for thirty days, June 6, 1891.

IRWIN, FAIRFAX, *Surgeon*.—Leave of absence extended seven days, June 4, 1891.

MEAD, F. W., *Surgeon*.—When relieved at Chicago, Ill., to proceed to Washington, D. C., and report to the Supervising Surgeon-General for duty, May 29, 1891.

MAGRUDER, G. M., *Passed Assistant Surgeon*.—Granted leave of absence for five days, June 1, 1891.

YOUNG, G. B., *Assistant Surgeon*.—Leave of absence extended fifteen days, on account of sickness, June 6, 1891.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will upon publication be liberally paid for, or 250 reprints will be furnished instead of payment, provided that the request for reprints be noted by the author at the top of the manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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ORIGINAL ARTICLES.

RARE COMPLICATIONS OF TYPHOID FEVER.

BY H. A. HARE, M.D.,

PROFESSOR OF THERAPEUTICS AND MATERIA MEDICA IN THE JEFFERSON MEDICAL COLLEGE OF PHILADELPHIA; PHYSICIAN TO ST. AGNES HOSPITAL,

AND

ARTHUR J. PATEK,

STUDENT OF MEDICINE IN THE UNIVERSITY OF PENNSYLVANIA.

WHILE we are aware that the general subject of typhoid fever is one about which little that is new can be said, in view of the host of able contributions which have already been made, we have thought that some peculiar phases of this common disease which we have encountered during the past few weeks were sufficiently unusual to warrant a report, both interesting from a clinical point of view and useful by reason of the addition made to the statistics regarding the complications of enteric fever.

The first cases of which we shall speak presented acute mania ushering in the attack. The histories are as follows:

Annie M., aged twenty-four years, was admitted to St. Agnes Hospital, March 18, 1891. She had been feeling badly for some time, but until four days previously had been able to do her work. On the 14th she had severe headache, vomited a little, suffered from pain in the stomach, and had some diarrhœa, these symptoms being followed on the subsequent day by not very profuse epistaxis. She walked a considerable distance to the hospital, and on her admision at 10 P.M. her temperature was found to be 105°. The resident physician found that her tongue was thickly coated, dry and brown. On the next day, when seen by us in the wards, the tongue was unusually clean, even for that of a healthy person. The patient was delirious, and so violent that it required four or five persons to keep her in bed. The temperature, after an unusually prolonged and severe struggle, was found to be 106°. At this time every symptom of typhoid fever was completely masked by the mania. The bowels were moved, and the passages were of *normal consistency and color*. The urine was somewhat scanty and high-colored, and the pulse full and strong. There were no rose spots or other enteric symptoms. At the end of twenty-four hours the patient, still being in a condition of wild mania, was removed to a cell, the impression being that it might be a case of hysterical mania with hyperpyrexia. Twenty-four hours later the mania had disappeared, and the typhoid symptoms once more reasserted themselves; the delirium became more quiet and muttering, and she was taken back to the wards. During the following week she was constantly delirious, and frequently maniacal, although there would be short momentary intervals of sanity. During this time a large number of rose spots appeared on the abdomen and chest, the tongue became heavily and typically furred, the temperature followed a characteristic course, the typhoid odor was present, and an occasional nose-bleed helped to confirm the diagnosis of typhoid fever. The patient rapidly became worse, and died thirteen days after admission, without becoming sane, except for the brief intervals named.

The second case is as follows:

Mr. A., living in Milwaukee, aged thirty-four years; married; one child. A sister died of convulsions, of unknown nature, but a short time before the onset of his illness. Family history otherwise negative. At the age of seventeen the patient, according to the statement of his physician, had an attack of typhoid fever, attended with as much, if not more, delirious excitement than this, the second attack. The history of the case begins with the circumstance that Mr. A. was nursing his wife, who was down with a mild attack of typhoid. The patient's first complaint was of headache and insomnia. The visiting physician, seeing him on the following day, ordered him to bed, recognizing the case as one of typhoid fever, rather because of the existence of a like case in the same house and from the mere complaint of malaise, than from any symptons particularly characteristic of the disease. The patient obeyed the instructions of the physician, and went to bed, still complaining of insomnia. Hardly had he fallen into mild slumber when, not more than an hour later, he suddenly awoke, delirious, and grew steadily more so. During the following night he became maniacal, rushed to the room of the nurse (she had been procured since the husband's illness), burst open the door, threw the nurse to the floor, and assaulted her in a most violent manner, kicking and striking her, and accusing her of wishing to harm his wife and child. The nurse finally managed to escape, and ran for the physician, who lived across the street. In the meantime the patient jumped through a window leading to a small balcony over the front portico, and leaped to the ground, where he was found a few moments later by the physician. Strange to say, the man suffered little injury, being slightly bruised by the fall, and somewhat cut by the glass; but stranger still was the fact that he was now quite rational, telling the physician all that had transpired, and what he had done. The patient was again put to bed, now apparently quite comfortable. The physician left him to see the wife in an adjoining room. Hardly, however, had he gone

when Mr. A. suddenly sprang from the bed, rushed into the kitchen, where he seized a large knife, and then rushed back, bent upon assaulting the physician. He was, however, overpowered, and again forced to bed. He now rested comfortably, and when seen the following day was doing well. That evening a condition of hyperpyrexia suddenly intervened, and in a few hours the patient was dead.

The interesting features of these cases are that the enteric fever was ushered in by mania. As is well known, it is not uncommon for typhoid fever to be followed by nervous or mental disorders of a more or less persistent character, but it is exceedingly rare for the attack to begin as it did in the cases here reported. Liebermeister, in his article on typhoid fever in Ziemssen's *Cyclopædia*, states that it is by no means rare to see psychical disturbances which do not depend upon any demonstrable lesion, and which generally are of favorable prognosis. In these cases, however, the mental disorder is a *sequela*, not an early symptom, and the condition is to be separated from ordinary delirium. Although Liebermeister gives no statistics as to these complications, and makes little reference to cases such as we have described, he uses these words:

"At the height of the disease, however, the development of such symptoms, or of any uncommon brain symptoms, must be looked upon with alarm." In Hutchinson's article in Pepper's *System of Medicine*, *post*-typhoidal mania is fully discussed, but nothing is said of *pre*-typhoidal mania. Niemeyer does not mention such a complication.

The following cases, which we have found in the literature of the subject, are of interest. Murchison[1] reports the case of a German who was much excited over the Franco-Prussian War. After about four days of discomfort and malaise, he suddenly passed into a state of acute maniacal delirium, requiring two men to control him. There was an absolute refusal of food, a temperature of 102°, with a dry tongue and rapid pulse, slight diarrhœa, and no spots. The patient was subdued by large doses of chloral, and the fever ran its course. The same author also states that in several instances he has known acute mania to develop on the first day of an enteric fever, and that under these circumstances the case is very apt to be mistaken for insanity.

J. C. Wilson[2] asserts that delirium may be an early symptom of enteric fever, and quotes Riberalba, who reported four cases which were delirious on admission to the hospital. Louis saw two cases which were delirious on the first night of their illness. Bristowe has also reported a case in which maniacal delirium existed on the second day. Mottet mentions an instance of typhoid fever complicated with mania to such a marked extent that the patient was placed in an asylum before the true nature of the ailment was discovered, and Henrot and Bucquoy have seen the disease ushered in with the delirium of grandeur. Finally, Daly[1] records an instance in which aggressive mania came on on the fifth day, following a condition of stupor.

From a careful examination of a large amount of literature, we are convinced that the prodromal mania in enteric fever is most rare and, when it occurs, is almost always fatal, while the mania which is in the nature of a sequela may be looked upon as devoid of immediate or remote danger to mind or body. We have also asked a large number of physicians as to their experience, but the reply has been that they have never met with pre-typhoid mania.

Passing from the consideration of this complication, let us call attention to a much more common, but still a rare, accident in the course of this disease. We refer to *erysipelas*. According to Liebermeister (loc. cit.), this complication occurs generally during convalescence and *seldom at the height* of the disease, and this writer also believes it may be a dangerous factor. In 1420 cases of typhoid fever in Basle, erysipelas appeared ten times, and all of the ten recovered. These were all cases of facial erysipelas. Two others developed the disease about bed-sores. In other words, erysipelas occurred in a little less than 1 per cent. of these cases. Griesinger[2] states that it occurs in about 2 per cent.

The following cases occurred within a period of six weeks of each other in the wards of St. Agnes Hospital. The first was separated from the second by an interval of five weeks, and the second from the third by less than a week. They were all in the same ward, but occupied beds at least twenty feet apart. The first case is as follows:

Maggie T., aged twenty-two years, was admitted December 16, 1890, with a history of chronic suppuration of the middle ear. She was treated at the dispensary and rapidly improved, being discharged on December 23d. On January 8, 1891, she was readmitted with well-defined symptoms of a mild attack of typhoid fever, which ran a short course, the patient being discharged on January 30th. On February 2d she entered the house, complaining of pain in the abdominal region and in the knees and elbows; the pains were not very severe, but the joints were somewhat swollen; the tongue was brown and dry, and all the symptoms, such as the stools, the rose-colored spots, the characteristic temperature and appearance of the patient, pointed to a second attack of typhoid fever, although at first the case was treated as one of rheumatism. The temperature did not exceed 103°, and the patient

[1] Lancet, 1870, ii. p. 807.
[2] Philadelphia Medical Times, 1884-85, xv. 577-581.

[1] THE MEDICAL NEWS, 1882, xl. p. 68.
[2] Infectionskrankheiten.

went through a moderately severe attack of typhoid fever without complication, except for very marked enlargement of the glands of the neck, which was relieved very promptly by the use of an ice-collar. On March 5th a well-defined erysipelatous swelling appeared over the left side of the face, about the temples and malar bone, and gradually extended over the entire face and part of the scalp. The eyes were completely closed, and the lips very much swollen. The mouth was very painful, being covered with sordes to such an extent that it was impossible for the tongue to be protruded, and it was almost impossible for food to be taken. The throat was very dry, and a spray of listerine was used as a mouth-wash. The ordinary treatment for typhoid fever was at once withdrawn, and the patient was put on 30 drops of the tincture of chloride of iron, three times a day. Under this treatment she improved, and by March 16th all inflammation had entirely disappeared, leaving only some swelling, which, in the course of the next two weeks, entirely passed away. The patient during this time continued to manifest symptoms of typhoid fever and was unable to leave her bed on account of this disease for three weeks after the erysipelas had disappeared. Total recovery eventually took place.

The second case was that of A. E., a female aged twenty, who was admitted to the wards with all the early symptoms of enteric fever, which developed into a moderately severe attack, but was without any extraordinarily severe symptoms. It was estimated that at the time the erysipelas developed she was in the third week of the typhoid fever. At the onset of the erysipelas there was a chill, followed by a rise of temperature of 2°, and followed, after the use of a cold bath, by a fall to the temperature course previously pursued. The erysipelas began about the bridge of the nose and extended rapidly over the entire face back to the ears and to the margin of the hair, whence it ceased to spread. The eyes were closed and the lips much swollen. An examination of the serum withdrawn by a lancet showed the characteristic streptococci of erysipelas. Under the use of large doses of tincture of the chloride of iron and an application of ichthyol ointment, recovery rapidly took place. The mouth was unusually foul and dry, but no delirium was present. We could not notice that the complication in any way increased the gravity of the case.

The third case is as follows: A woman, aged nineteen, a Swede, was admitted in the early stages of typhoid, which ran a mild course, devoid of delirium or any symptoms of importance, except that on an afternoon about the middle of the third week of her illness she developed a sudden rise of temperature to 104°, followed at once, on the use of cold bathing, by a fall to 98°, with loss of the pulse at *both* wrists. As a precautionary measure, she was treated as if suffering from intestinal hæmorrhage, and soon rallied, developing during the next twelve hours a typical patch of erysipelas on the right side of the nose and over the malar bone. There was no further disturbance of the typhoid temperature, and the disease remained limited to that side of the face. The patient was treated with iron and ichthyol.

By far the most exhaustive study which we have found concerning erysipelas as a complication of typhoid fever is that of Gerente.[2] According to this authority, the complication comes on in one of every sixty-one cases, which would give a much higher percentage than that of Liebermeister or Griesinger. Gerente states that females are more commonly affected than males, which is a curious fact, because males are more exposed and more frequently have typhoid fever. In regard to the period of the disease at which erysipelas, as a rule, appears, Gerente states that it is generally after the twenty-first day, and he also believes that some epidemics of typhoid are peculiarly liable to this complication. The following conclusions of Gerente, however, embody most of his statements:

1. Erysipelas of the face is rarely met with during the course of typhoid fever. I have found it in 64 out of 3910 cases, which is about 1 to 61. These figures are derived from the following statistics:

	Typhoid Fever. Cases.	Erysipelas. Cases.
Chomel	130	4
Louis	134	3
Forget	92	1
Jenner	65	2
De Larroque	105	4
Zuelzer	84	3
Liebermeister	1420	10
Zuccarini	480	18
Griesinger	500	10
Murchison [1]	900	9
	3910	64

2. Outside of the question of contagion, it appears to be most frequent in the grave, adynamic forms of typhoid and in those of long duration; it appears to be most frequent in lymphatic subjects.

3. While observed at all the stages of typhoid fever, erysipelas shows itself especially and almost exclusively during the last period and during convalescence.

4. Under these circumstances erysipelas produces a marked amelioration in the general as well as in the local symptoms.

5. The appearance of facial erysipelas in the course of typhoid fever is of grave prognosis (16 deaths out of 36 cases); this gravity lies less in the erysipelas, which most frequently is benign in itself, than in the poor general condition of the patient, the secondary infection being an indication of this condition.

6. The complication consists in a simple coinci-

[1] Thèse de l'École de Médecine, 1883–84, t. i.

[2] The number of Murchison's cases is not strictly correct.

dence favored by debility, the result of the primary and principal disease.

We think the statement that erysipelas seriously influences the prognosis in all cases too sweeping. Thus, there are cases on record in which the onset of the acute disease has not in any way retarded convalescence. If the disease becomes phlegmonous, the prognosis is, of course, very grave, but if the inflammation is capable of undergoing resolution the prognosis is good.

The question as to the path by which the contagion finds entrance has been much discussed, but the opinion of Griesinger is generally accepted. He believes that the germs gain entrance by means of the inflammation of the frontal or sphenoidal sinuses, and also when ulceration of the buccal mucous membranes exists. Zuelzer also points out that in his own cases and in those of Zuccarini the erysipelas started in the stomatitic spots and ulcerations in the mouth.

In all our cases the patients complained very much, both before and after the attack of erysipelas, of the soreness of their mouths.

The following cases which have been reported in addition to the three of Gerente are interesting:

Armieux[1] reports the case of a soldier, in whom typhoid symptoms set in on September 18, 1881, with pain in the head, vertigo, abdominal tenderness, pain in the right iliac fossa, and an elevated temperature. On October 4th, a complication arose in an otorrhœa, which, by the 22d, was growing steadily worse, so that the patient's condition was critical. Now, facial erysipelas made its appearance, beginning in the auditory canal. Early in November osteitis of the humerus set in, and the patient died on the 9th of November.

Thielman[2] reports the case of a man, aged thirty, brought into the hospital in an unconscious condition. The right ear, eyelids, nose, greater part of the face and forehead were covered with an erysipelatous eruption. The tongue was dry and brown, there was pain in ileo-cæcal region, and the liver was painful and enlarged. The fever was recognized as typhoid and the patient put upon calomel. The patient was in a delirious condition, but on the following day there was a slight remission, and he became partly conscious. The erysipelas was seen to be spreading further over the face, but leaving its original seat. There was delirium the following night and semi-consciousness. Desquamation set in on the right side of the face, the eruption extending on the left. The pulse grew stronger, but the tongue was still brown in the centre. The patient was noticed to be troubled with occasional cough, and the respirations were somewhat more frequent. Examination showed a hypostatic congestion of the lungs. The condition became critical, but was relieved, and the patient gradually improved, being dismissed as cured on the thirty-fifth day after admission.

M. Berthoud[1] reports the case of a soldier who had typhoid fever of a meningeal type. The typhoid fever was declining, but convalescence was tardy, and his general condition was unsatisfactory. At this time the scrotum became tumefied and red, the redness spreading to the inguinal regions, while the general condition became very poor. The scrotum was triple its natural size, red, moderately warm, tender, not very painful, but œdematous, the redness extending to the right and left inguinal regions, as far as anterior superior spinous process, and also to the internal aspect of the thigh. The skin in these parts was swollen but soft, and the color persisted on pressure. On the next day there was no amelioration of the symptoms, but a very small area of necrosis appeared on the scrotum, which was treated by the application of the cautery. On the following day the necrosis seemed to be arrested and the scrotum reduced in size. The general condition, however, remained alarming. Six days later the patient died, after a subdelirium of four hours. The autopsy showed that the iliac and renal veins were involved in a plastic and suppurative inflammation, a case of erysipelas of the veins. The conclusion reached is that the redness of the skin and infiltration were due purely to mechanical causes, viz.: the stagnation of blood.

Freudenberger[2] has recorded two cases, in one of which erysipelas appeared suddenly on both ears in the course of typhoid fever, without unfavorable symptoms. On the following day a chill and rapid advance of the disease took place. The typhoid fever was now considered as declining, but the prognosis grave, because of the erysipelas. In the second case facial erysipelas suddenly appeared during convalescence from typhoid fever, although the temperature was already quite low. The fever became high again, but was easily influenced by antipyretics. The pulse was 140.

Potain[3] reports a case of erysipelas coming on during convalescence from typhoid fever, which was accompanied by a severe chill and fever. The erysipelas began in the pharynx and palate and did not affect the tonsils. On the next day the inflammation appeared at the corners of the mouth and on the face.

Finally, Martinez[4] reports the following cases:

A girl, twenty years of age, belonging to the lower class, of lymphatic temperament, with very irregular menstruation, which was often almost absent, was taken ill with typhoid fever. The symptoms were obscure at the onset of the disease, but the most prominent manifestation was an erysipelatous inflammation of foot and leg. On the fourth day the erysipelas was marked, there was great fever, cephalaglia, and other typhoid symptoms, such as

[1] Rev. Méd. de Toulouse, 1875, ix. 42.

[2] Med. Jahresbuch v. Peter-Paul Hosp. in St. Petersb. (1840, 1841), 142–147.

[1] Gaz. des Hôp. de Par., 1848, vol. v. p. 29.

[2] Aertzl. Intelligenzblatt. München, 1880, xxvii. p. 37.

[3] "Erysipèle de la Face consecutif à la Fièvre typhoide." Gaz. des Hôp. de Paris, 1880, liii. p. 1106.

[4] La España Médica, Madrid, March 1, 1860, p. 135.

weakness, gurgling in the right iliac fossa, dryness and tremblings of the tongue, sordes on teeth, great stupor, delirium, and a frequent and small pulse. Death took place after some days.

Whether the erysipelatous trouble had anything to do with the causation of the typhoid symptoms or not Martinez does not state, but he mentions the case of another woman in whom an extensive erysipelatous inflammation of the face and scalp produced cerebral symptoms, fever, etc., but they were not so pronounced as to be confounded with those caused by true typhoid fever, as in the present instance. In this case the patient recovered.

SIMPLE MELANCHOLIA AND ITS TREATMENT.[1]

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MELANCHOLIA is mental pain. It is a condition of emotional depression. It is the antithesis psychically of mania and emotional exaltation. Not all conditions of emotional depression, however, are melancholia, nor does melancholia include all forms of mental pain. "Man is prone to evil as the sparks fly upward" and evil brings pain. It is only when mental pain exists without adequate cause, or when the degree in which it exists is out of proportion to the exciting cause, that it can be called melancholia. Melancholy is physiological; melancholia is pathological. Both are mental pain—the one has a physiologically justifiable origin; the other is always dependent upon disease.

Melancholia is the simplest form of mental disease. It is the usual form of mental disease in the incipient stage, though this stage may be very brief, and is often known to none but the unhappy victim. Melancholia shades off into melancholy by imperceptible gradations, and the dividing line between them is often ill-defined and uncertain. The first indications of mental disease are usually only removed from the normal mental functions in slight degree, and are usually such as are consciously recognized by the patient himself. This recognition and the accompanying anxiety give rise to a feeling of depression which can justly be called melancholy in the first instance, but which usually has or soon acquires some of the elements of the pathological form. In many instances this stage of primary depression is only transitory, and as the consciousness of the patient becomes more disturbed he passes rapidly into a condition of exaltation. In others, however, the depression only deepens as the disease extends its limits and the mental pain becomes more intense and more irrational—more out of proportion to any possible justifiable cause.

In its incipient stages melancholia is usually simple; that is, a simple emotional depression without well-formed delusions. I have seen cases, however, in which the first symptoms noted by others than the patient himself were hallucinations of some special sense and the resultant delusion of persecution or of a pursuing foe. Simple melancholia may exist as such for a considerable time, without progressing into the forms pathologically and symptomatologically further removed from melancholy, but as a rule the progression into some one of these forms is somewhat rapid and does not occupy more than a few weeks. Even in the simplest forms we see the tendency to the development of delusive ideas. There is an ill-defined impression of impending evil, a subjective sensation of weakness, want of self-confidence, a sense of unworthiness, and a disposition to become irritated by trifles, to be annoyed and disappointed by insignificant occurrences, often rapidly following delusions of threatening want or of loss of family, of the commission of the unpardonable sin, of eternal condemnation, or of persecution by general or specific enemies. There is no other form of mental disorder so insidious in development or so delusive as to its terrible consequences and results.

The chief symptom of melancholia is the disorder of consciousness. There is a diminished intensity of the object-consciousness and a heightened subject-consciousness. The patient loses interest in business affairs, neglects obligations and the ties of family, and is occupied more and more with the subjective sensations and impressions of impending evil. The former is the negative aspect of the disease, while the latter is its active phase. Melancholia cannot be said in every instance to be a form of insanity, though it usually is. There are cases in the incipiency of which there is an ill-defined feeling of depression which overpowers the patient, of which he is fully conscious, but against which he is powerless to offer any resistance. Griesinger (*Mental Diseases*, p. 210) says of this form: "The melancholia which precedes insanity is distinguished from the mental pain which is experienced by healthy persons by its excessive degree; by its more than ordinary protraction; by its becoming more and more independent of external influence, and by the other accessory affections which accompany it."

With the disorder of consciousness which accompanies the more advanced stages, there is a coloring of Nature which affects the whole environment of the patient. This emotional state gives a dark and gloomy interpretation to all about him. He sees everything from an unfavorable standpoint.

[1] Read before the Southwestern Ohio Medical Society, at its semi-annual meeting, April 3, 1891.

For him all Nature is unpropitious and wears her darkest frowns. There is a difficulty in concentrating the attention on anything external to himself without unusual effort, and "there is a want of vigor in the representation of the environment" (Bevan Lewis, *Mental Diseases*, p. 117). As the same author also expresses it, in the same connection, "there is a state of cerebral torpor in the physical substrata of object consciousness and a state of cerebral irritation in the physical substratum of subject-consciousness."

Melancholia assumes different forms in different individuals. The causes for this variation, I imagine, are about as follows: (1) the varying influence of individual cerebral structure and the resultant individual temperament; (2) the extent of the diseased process; and (3) the varying implication of the different parts of the cerebral structure. As has been already stated, that form which is least removed from physiological depression is simple melancholia. The physical disorder is least advanced in these cases; it is less extensive and the prospect of recovery is much better. Nearly all cases of the simple form recover, if discreet treatment is commenced in time. In those cases, however, in which the simple form is but a transitory stage in the development of the more severe varieties, the prognosis is less favorable, and the results of treatment more unfavorable.

The first symptom is usually an irremediable fatigue, a tired feeling, which is not removed by the periodical rest which the individual formerly found sufficient. There is a jaded feeling, and it requires a constant effort to keep the attention fixed on the subject in hand. The affections also become changed; there is no pleasure in family or friends; courage is lessened; there is greater irritability; more impatience at restraint, and religious belief even brings little solace. Sexual desire is lessened and the ability to gratify it diminished; the appetite is dulled, and there is often an uncomfortable feeling after eating. The bowels are usually constipated, the tongue coated, and the various secretions diminished in quantity. Sleep is usually disturbed, and insomnia is often one of the early and most troublesome symptoms. If these indications are heeded, and rest, change of scene, freedom from causes of worry, and nutritious food in abundance are secured, improvement usually begins in a few weeks or months, and continues until the former state of health has been restored. If these steps are not taken, the condition has a tendency to progress and develop into the more severe forms. In some cases this primary stage is transitory, and in spite of treatment the disease rapidly progresses into the more permanent and more serious varieties. The symptoms then become more severe; the disturbance of health is more pronounced; the reason is more in abeyance or more perverted. The morbid fancies gradually become more fixed and more clearly defined. Gloomy fears pervade the mind. The thoughts are fixed on self and with the rise in intensity of subject-consciousness there is a fading out of the normal significance and importance of the outside world. In many cases there is increasing suspicion, and evil is ascribed to the action of everyone. In some instances there is a remarkable paralysis of volition, and hours may be consumed in forming a determination to excute the simplest and most unimportant duties. The memory is usually not much impaired, but there is great difficulty in controlling and concentrating the attention. Suggestions of suicide, as a relief from the horrors of the situation, are frequent. They should be constantly borne in mind, and their presence suspected in every case of depression. They are often present when least expression is given to them, and the silent determination is by far the most dangerous. The only safe rule to adopt is to view every melancholiac as a possible suicide, and to direct the treatment accordingly.

It is not my purpose to go into detail in the description of the more pronounced forms. It is with the disease in the incipient stage that the general practitioner has to deal, and its symptomatology and treatment are most important to him. As the delusive ideas become more fixed, they assume innumerable forms and, according to the conceptions of different authorities, give rise to many clinical varieties. A large group of delusions relates to the bodily functions; every possible as well as impossible form of bodily disease may be the subject of such a delusion. To cases of this class the name of *hypochondriacal melancholia* has been given. The delusions not infrequently have a basis in actual disease. Delusions concerning the stomach and bowels often have their origin in dyspeptic disorders or some organic abdominal disease. When the delusion has a more general character and is permanent, engrossing more or less completely the patient's thoughts, the condition is called *delusional melancholia*. When the motor functions are more prominently involved there is greater restlessness, and *motor melancholia* or *jactitating melancholia* is the name applied. If accompanied by mental excitement approaching delirium, the condition is called *frenzied* or *delirious melancholia*. If there is torpor of the intellectual functions, it is *stuporous melancholia*, and in marked cases *melancholia attonita* of the French; in the profounder disturbances of the motor functions there may be convulsive seizures giving rise to an *epileptiform* variety. Another variety which is sometimes mentioned is *organic*

melancholia, in which there is evidence of localized or gross organic lesion of the cerebral tissue, but it may well be doubted whether such a distinction is wise, for in reality all forms depend upon organic change of some kind in the cerebral tissue, at least for the time being.

The chief primary and determining cause of melancholia, that which gives direction to the diseased process, and also determines the character of the mental symptoms, is to be found in the peculiarities of the structural arrangement of the elements of the cerebral convolutions. The cells are more than ordinarily sensitive; that is, they respond more readily than usual to impressions. Their receptive capacity is increased beyond the average; the individual feels intensely; his affection-capacity is excessive. Comparatively slight causes produce marked variation in his emotional state. He passes from one extreme to another under slight exciting cause. There is also, more or less marked, a morbid temperament, which predisposes to mental pain; there is a weakened resistance and a tendency to lose the normal sense of well-being from slight causes, either from within or without. This temperament and this predisposition are strongly hereditary, and, according to some authorities, more so in the male sex from the mother, and in the female sex from the father.[1] In such cases there is also a tendency to depression after acute bodily diseases, fevers, pulmonary and cardiac affections. In such predisposed persons there is also often a want of proper adjustment among the mental faculties. They are, on the other hand, sensitive, neurotic, sympathetic or melancholic, impressible, and with weakened resistance, yet possessed of such active energy, such ambition, or such strong volitional control that they keep the flagging powers in activity until the danger-point is reached, and a less ambitious individual or one of weaker volition would have heeded the warnings of Nature and have yielded to the demands of exhausted tissues. Though this is often the gift of genius, it is a dangerous power, and in its possession the safety of the mental autonomy is often jeopardized.

Of exciting causes it is unnecessary to speak further than to say that they are as various as the evils to which flesh is heir. They are such as directly produce exhaustion of the cerebral elements by undue drain upon their resources, or interfere with their proper nutrition. Pathological depression is rare in well-nourished brains. Perversion of nutrition is the rule. The sources of this perversion or interference are three-fold. There may be such disease of the bloodvessels as incapacitates them for the proper performance of their functions, and starvation of the cells thereby results; or the nutritive elements of the blood may be deficient in quantity and quality; or lastly the blood may carry to the cells material which acts as a poison to them; and thus destroys their energizing capacity. Whatever the cause, the actual result is that the cerebral cells are impoverished and are thrown into disorder because of their poverty. It may be that their reparative power is naturally deficient, and that a comparatively slight burden is sufficient to exhaust them. Some types of brain-cells are essentially short-lived and have but little reserve power. They are constantly put upon the strain by their everyday routine of work, and any slight excess may result in disaster to them.

While there is occasionally some difficulty in diagnosticating the existence of melancholia, because it shades off so imperceptibly into mere depression, it is a form of mental disorder in which the symptoms cannot long remain concealed. There is usually less difficulty in the examination of such a patient than in many other varieties of insanity. The patient is nearly always conscious that he is not well, and will admit the fact. His description of his symptoms is usually a reliable guide to the discovery of his mental derangement, but he almost invariably attributes them to erroneous causes. There is seldom much difficulty in getting the patient to talk, and in the examination of the insane one of the most valuable qualifications is to be a good listener. Let the patient do the talking, and, as far as possible, confine your own remarks to such as will draw out his peculiarities. There are usually some physical symptoms which are valuable aids in diagnosis. Digestive disorder is frequent. There is often loss of flesh, and there are the general evidences of impaired nutrition. Examine thoroughly for hallucinations and delusions. These always indicate a more serious malady, and one which is less likely to be transient. Hallucinations of smell are thought to be especially of unfavorable omen, and after them those of hearing. Delusions are unfavorable indications in proportion to their prominence and the degree in which they dominate the reasoning powers. Those of self-condemnation and future punishment are most likely to lead to suicidal attempts, while those of persecution and suspicion are more productive of homicidal outbreaks. All such delusions should be carefully noted, and the true significance attached to their presence. The profession is scarcely alive to its responsibilities in this regard. Take no risks. It is far better now and then to needlessly restrain a patient for a few weeks than to permit the continuance of the daily record of suicides and homicides from unheeded indications of danger with which

[1] Clouston: Mental Diseases.

the daily press now teems. It does not follow that hospital restraint is always required, but efficient means should be taken to secure the patient's safety, and if this cannot be done outside of a hospital, then to one he should go.

The pathology of melancholia in its earlier and simpler forms is not such as admits of satisfactory ocular demonstration. It is chiefly seen in perverted function and evidences of collateral physical disturbance. The essential feature in it is the impaired and perverted nutrition of the cells of the cerebral cortex. This may be primary, dependent upon causes which act directly upon the cells in modifying their molecular arrangement, by overstrain, or work of kind and quality beyond their capacity of safe performance; or secondary, produced by disease of other tissues or other organs, the healthy activity of which is necessary to their proper nutrition. This disease may be in the cerebral blood-vessels, in the digestive tract, in the liver, the kidneys, the lungs, the heart, or, in fact, to a greater or less degree in any tissue of the organism. Diseases of the digestive organs and of the cerebral vessels are the most frequent. The brain cells do not show the gross lesions of alcoholic insanity, paretic dementia, or of many other forms of mental disorder, nor is the destructive change so rapid. There are not the evidences of violent perturbations in the adjoining tissues, so usually found in maniacal states. For this reason melancholia offers a better prospect of improvement, after a prolonged continuance of the disordered state, than do most of the other forms of mental disorder. I have known a not small number of cases to recover completely, or nearly so, when the disease was of several years' duration.

The treatment of melancholia is a complex question, and cannot be stated in general terms. There is no disease in which the individuality is so dominating as in insanity. Every case is a separate study, and the treatment should be adjusted to the peculiarities found in each. The first consideration is usually that of safety. What has already been said in that connection will point the way. In every case have in view the possibility of suicidal or homicidal impulses, and search for them. If the depression is profound, or there are present delusions of persecution or self-condemnation, great care should be exercised in providing efficient supervision. Cases of the agitated form are less liable to such impulses, except in the rather rare cases in which this class of delusions is also present. Care should be taken in the apathetic form that such accidents do not happen, for the stupor and consequent silence may conceal dangerous delusions, which may unexpectedly give rise to dangerous impulses. Change of environment is advisable in nearly all cases. This is more universally true than in cases of exaltation. The painful mental state in which the patient lives is connected largely with the circumstances of his environment and removal to new surroundings and the starting of new lines of mental activity thereby is an important condition of successful treatment. The particular nature of this change, the kind of selection which is made, must be determined by the situation and peculiarities in each case. In one, removal to a hospital may be best and the only thing practicable. In another, a stay in the country, removed from all forms of irritation, and with but little society other than the required nurses, may be most advantageous. In still other cases, the removal to busier surroundings and to a more active life may prove best. Changeable climates, with low barometer and moist atmosphere, are to be avoided. Tact should be used in selecting the proper kind of companions. Too much attention and too great a manifestation of sympathy may prove as injurious as neglect or harshness.

Having chosen the most favorable environment practicable, selected the most judicious companions available, and made certain that the safety of the patient is insured, the next consideration is the daily line of conduct which should be prescribed. Many of these patients have led sedentary lives and have neglected the cultivation of their muscular system. In such cases, carefully adjusted and methodical exercise of the muscular system will be of advantage. Walks in the open air, gymnastics, massage, baths with friction afterward, with a complete cessation of all mental activity as far as possible, constitute the proper regimen for these. Such treatment will tend to divert the blood-current to other regions, and thus relieve the passive congestion which is frequently the accompaniment of the impairment of nutrition of the brain-cells, and prevents the proper supply of healthy blood, while it also contributes to the enriching of that fluid by removing waste-products and stimulating the assimilative processes. In the motor forms, exercise is likely to be injurious, and rest and quiet should be secured instead. In all, any prodding of the mind to intellectual effort is to be discouraged and avoided. As the mind shows capacity for healthy exercise, it should be led into pleasant paths in which exercise will be amusement, and where, as far as possible, the mental landscape will be at variance with that which developed the depression and the melancholic fancies. All these are most important requisites to successful treatment; and a companion with tact, experience and the proper breadth of intelligence is worth more than all the articles of the materia medica.

After rest and properly regulated and selected exercise comes the question of nutrition. This is a broad field, and should be carefully studied in each

case. Clouston's "gospel of fatness" in these cases is of incalculable advantage. Encourage assimilation by every possible means. Give the most nutritious diet and in quantity as large as can be utilized by the system. Don't be afraid of the amount consumed. It cannot be too great. Stimulate the secretion of the digestive fluids. Carry off the waste products promptly and thoroughly, and then see that the brain is given the opportunity to utilize the material furnished it. Encourage sleep by every means within your power, and never curtail the amount. Remember that it is advantageous in proportion to its approach to the natural variety. The stupor of many narcotics, particularly in large doses, is not sleep, and gives the brain no opportunity to obtain nutritive supplies. This is the great purpose of sleep, and is not accomplished by simply creating a condition of unconsciousness by the circulation of a drug through the brain. Hypnotics are only of value to adjust the conditions and start the process, leaving Nature to perform the actual work. Use hypnotics sparingly and as a last resort. Remove as far as possible all the obstacles to natural sleep, and test first the influence of change of environment, new forces and new lines of mental activity. They will often work wonders, when, if hypnotics have been given, the effect is likely to be wrongly attributed to them, and their use continued to the detriment of the patient. Of the many in use, perhaps paraldehyde is the least depressing and the least injurious, though difficult to administer and most unpleasant. The bromides and cannabis indica are useful in the more active forms. In the very excited cases a combination of the alkaloids of hyoscyamus with morphine, given by preference hypodermatically, I have found invaluable in controlling the motor irritability and conducing to natural sleep. Chloral and sulphonal are usually too depressing in their after-effects to be of advantage. Strychnine, arsenic and phosphorus are of use, as the system can take care of them. Iron is often useful in anæmic states. The bowels should be kept freely open and stomachic tonics used judiciously. Remember that the brain is in direct communication with every portion of the animal economy, and that for its healthy action the condition of no other organ can be safely neglected.

A CASE OF PUERPERAL SEPTICÆMIA.

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ON February 22d, at 7 o'clock A.M., I was called to attend Mrs. B., aged thirty-six years. She had borne four children and had aborted four or five times by self-induction. She then desired another child, but, aborting twice from habit, she consulted me. I succeeded in carrying her through to term.

When I reached her bedside I found her in the first stages of labor, the os slightly dilated and soft, a head presentation, and every indication of an easy labor. I left the house, made a few calls, and returned at 9 o'clock. Pains were recurring a little more frequently, and the os was the size of a silver dollar. At 11.30 the os was well dilated and the head in the vagina. The pains now became less frequent, the head did not further descend, and complete uterine inertia followed. At 2.30 I urged the necessity of applying the forceps, and the delivery was easily accomplished inside of twenty minutes. I soon delivered the placenta by expulsion, apparently intact. There was no hæmorrhage and no perceptible abrasion of the continuity of the parts, and I congratulated myself upon the result. I told the nurse I would call and use the catheter in the evening, but on my arrival I found the patient had arisen and urinated.

Early the next morning I was called to the hospital to assist in an amputation of the thigh. I found a case of gangrene, and was excused, but the "Esmarch" slipped during the operation, and I helped control the hæmorrhage until it was readjusted. I immediately washed my hands thoroughly in bichloride solution, left the hospital, changed all my clothing, and called to see my patient. I found her condition splendid and I gave her a vaginal douche at 3 P.M. But I was soon summoned by telephone and found her just recovering from a severe rigor. I waited one hour, her temperature reaching 100½°. I then gave her another douche, after which she was comparatively comfortable. I learned that many women of the neighborhood had called, and knowing that she was exceedingly nervous and excitable, I concluded she had had a nervous chill. I ordered her four five-grain capsules of quinine to be given within the next twelve hours.

The following morning the nurse's report showed the evening temperature 102°; morning, 101⅘°; pulse ranging from 100 to 120. I found the stomach irritable, a little abdominal tympanites, and pain in the right hypochondrium, radiating into the right thigh. I ordered twenty grains of antipyrine to be administered, gave her another uterine douche and an enema, the bowels moving freely with the escape of much gas. The temperature fell and the patient rested well until evening.

On February 25th, the third day, the evening temperature was 101°; pulse, 118. The tympanites was more marked, and the pain returning, I gave quinine, antipyrine, a vaginal douche, and a turpentine enema. The patient passed a bad night, the temperature on the fourth day being 101⅘°, and the pulse 84. She had been vomiting and was very restless. I gave her a douche and inserted a rectal tube. In the afternoon there was complete anorexia, and the morning symptoms were all exaggerated. I then requested a consultation with Dr. W. We gave a uterine douche, 1:6000 bichloride solution, but nothing came away, and we found nothing to justify the condition. There was no perceptible abrasion in the vaginal tract; the os felt intact; there was no odor and no soreness to the touch. We turned our attention to the symptoms and prescribed: tr. nucis

vom., ʒj.; tr. bellad., ʒij.; tr. menth. pip., ʒjss.; sulph. magnes., ʒiv.; elix. simpl., q. s. ad ℥iv.—M. Sig.: ʒj. every two hours. We also ordered an enema of turpentine, a milk diet, and the water to be drawn every eight hours.

On the fifth and sixth days the symptoms were about the same, the tympanites being controlled by keeping a rectal tube inserted above the sigmoid flexures. Milk was not well retained, and I ordered it partially digested with Fairchild's peptonizing powder, after which it was well borne.

The seventh day the tympanites was enormous, the pain unbearable, much vomiting and headache, the pulse 88, and the temperature 102°. Dr. W. was again called in, and deciding the treatment should be on the expectant plan, we gave one-half grain morph. sulph. et atropia sulph. grain $\frac{1}{100}$ hypodermatically at 10 P.M. The patient slept ten hours, awaking in the morning much improved, the bowels moving naturally.

From this to the thirteenth day there was but little change; the temperature did not go above 102°; the pulse not over 104.

On the fourteenth day the pulse was very weak; there was vomiting, diarrhœa, and night-sweats. I gave bismuth and bicarbonate of soda and milk by the rectum, with sulphate of atropia hypodermatically for the night-sweats.

On the fifteenth day I consulted with Dr. W. The pulse was 92 and weak; the temperature 100⅘°. I had come prepared to curette and douche the uterus, and to this Dr. W. agreed. Under anæsthesia, I curetted thoroughly and was quite surprised at the amount of small bits of broken-down tissue that were brought away. I then douched with water that had been boiled, applied pure carbolic acid thoroughly to the uterus through a Wylie's applicator, and gave the patient milk and brandy per rectum. The temperature rose in one hour to 104°; the distress was marked, but controlled with hypodermatic injections of morphine.

On the sixteenth day all symptoms were much improved; the patient was transferred to a new bed, put upon tonic treatment and soft diet. She gradually improved until the twenty-fifth day, when I discharged her.

Though the most rigid antiseptic precautions had in this case been observed throughout, there is every reason to believe that in some way or other my patient was infected through my unfortunate connection with the above-mentioned case of gangrene. The more I see of such cases, the more I am convinced that curetting in such cases need not and should not be delayed, because, when done carefully and under antiseptic precautions, it can do no harm and may do a vast amount of good.

I may doubtless be criticised for the free application of carbolic acid to such a large absorbing surface, but I am upheld by Dr. C. C. Hunt, of Dixon, Ill., who has treated successfully a number of cases of puerperal septicæmia in this manner, as reported by him in an excellent paper read before the Illinois State Medical Society, at Jacksonville, Ill., in May, 1889.

SECONDARY CARCINOMATOUS DEPOSITS IN ASSOCIATION WITH SCIRRHUS OF THE BREAST: WITH REPORT OF A CASE.

BY WILLIAM MARTIN, M.D.,
OF BRISTOL, PA.

SECONDARY carcinomatous deposits occur during the latter stage of the disease, forming in all parts of the body, but principally in internal organs. The most important of the changes which take place in carcinoma is fatty degeneration, which always occurs, to some extent, in all varieties of carcinoma. It is usually most marked in the encephaloid, but the more rapid the growth the earlier does the retrogressive change occur. Mucoid and colloid degeneration, with the formation of cysts from blocking of the ducts of the mammary gland, as well as hæmorrhage and pigmentation of tissues, may occur as secondary changes, whilst calcification or ossification are rarely found.

In all the varieties of carcinoma the tendency of secondary growths is to reflect the peculiarities of the primary. Exceptionally, in scirrhus, the growths in internal organs differ somewhat from the primary, in that they are softer and more vascular, resembling the encephaloid, to which variety they are regarded as belonging.[1] Although more rarely than in other parts, we do find that deposits take place in the osseous structures, the long bones being most liable to the invasion: foremost among these is the femur. The deposit is usually an infiltration, although it may be tuberoid. In the latter form the morbid mass is either solitary, or consists of several small nodules of irregularly rounded or oval shape, each about the size of a hazlenut. The infiltration usually or always begins in the cancellated structure, and is diffused through into the areolar tissue. The bone is seldom much altered in size or shape, but is liable to undergo rarefaction, and to be fractured at the seat of the disease. This tendency to fracture is very great. Fracture may be caused by the most trivial circumstance, such as turning in bed or muscular contraction.

The diagnosis of this secondary infiltration in the femur is evident from the subjective symptoms. The peculiarly constant, dull, heavy pain referred to the seat of the deposit, with occasional sharp, lancinating pains in the limb and body, increased almost beyond tolerance by the slightest pressure upon the part, are pathognomonic, as there is usually no history of traumatism to account for the degree of disturbance. As the slightest motion of

[1] Green's Pathology.

the part or pressure upon it elicits the most excruciating pain, the patient, as a protection from injury, usually flexes the limb, using the knee as a support for the bed-clothing.

The abdominal complications may also be marked, as will be seen in the following case, which the writer saw during latter stage of the disease, in consultation with his father, Dr. William L. Martin, to whom he is indebted for the report of the earlier history of the case.

Hannah H., about forty-three years old, married, the mother of four children, all living, presented a tumor in the right breast, which had been noticed for about two months, and which seemed to increase quite rapidly in size. Upon examination the tumor was found to be hard and mobile, occupying about one-quarter of the whole mammary gland, with the nipple somewhat retracted and drawn to one side. No lymphatic involvement was apparent. The diagnosis of scirrhous carcinoma of the breast was made, and an operation advised. The entire breast, together with the axillary glands, were removed by Dr. John H. Brinton. The patient made a good recovery from the operation, and in about three weeks returned home. She apparently remained physically well, but in the following spring noticed some hardened nodules around the cicatrix and in the axilla, which were removed a few days later. During the following fall she gave birth, at term, to a male child, of medium size and feeble vitality, which died a few months later from pulmonary disease. In a little less than a year from the primary operation the third was performed, all the cicatrices and underlying secondary growths being removed. It became necessary to repeat the operation in the fall of the same year. The fifth operation was performed nearly two years later, when a large mass of carcinomatous tissue was removed, and the axilla cleaned out. In the fall of the following year new growths in the axilla, with the cicatricial tissue and part of the pectoralis major were excised. In addition to these six operations there followed two minor excisions, the last being performed only a few months prior to her death, which took place less than six years after the primary operation.

Microscopical examination of the removed tissue conclusively showed the nature both of the primary and secondary growths.

The first operation was the most important, and the case illustrates to what degree life may be prolonged by early and thorough operation. As the tumor was unusually rapid in its growth the patient most probably would have died within a year from the time it was first noticed had nothing been done, while as the result of operative interference the patient lived for nearly six years after the first operation. During all this period, until within a short time of her death, she remained comparatively well, being able to attend to her household duties, although readily fatigued.

With some emaciation and tympanites, she also complained of a peculiar pain in the hip-joint, which she thought rheumatic, having noticed it but a short time before death. Two weeks before her death, while attempting to cross the room, she tripped and almost fell, with severe pain in the thigh near the joint, which caused her to take to her bed. The pain remained constant, and became an urgent symptom. Upon examination no fracture could be detected. It was thought that the peculiar pain was caused by secondary deposits in the neck of the femur. The limb was kept carefully protected in a comfortable position of slight flexion. Despite the greatest care, just before death a fracture at the neck of the femur took place, most probably from the muscular contraction, as no other cause could be assigned.

During the last week of life other symptoms became marked, and required constant attention. Of these dyspnœa was prominent, and was so decided as to necessitate a constant change of position, semi-recumbency being the most comfortable. In addition, there were moderate emaciation, the peculiar characteristic pallor of the face, tympanites, nausea and vomiting—the last more properly retching, at times very little matter being ejected, except when something had been taken into the stomach a short time previously. Pain was constant and severe, requiring anodynes frequently given hypodermatically, but subsequently not yielding to these means. Diarrhœa appeared during the last week. There was slight œdema of the lower extremities. The symptoms pointed to secondary involvement of the abdominal viscera, but a post-mortem examination was not permitted.

CURVED NASAL SEPTUM: A SUCCESSFUL METHOD OF OPERATION.[1]

BY CHARLES A. TODD, M.D.,
OF ST. LOUIS, MO.

THE conflicting views as to the best method of remedying curvature of the nasal septum by operation afford proof that surgeons have not yet satisfied themselves upon that point. But the problem demands solution, since by blocking the respiratory channel, the deformity gives rise to serious disorders that are sufficiently familiar.

The curvature is usually most pronounced in, if not confined to, the cartilaginous septum, though it often enough involves the osseous part as well; as Zuckerkandl points out, it is the anterior two-thirds of the septum that are affected, the posterior part of the vomer rarely swerving from the vertical.

The first operation to straighten the septum, with preservation of its integrity, was devised by the English surgeon, Adams, who forced the septum into place with flat-bladed forceps and then retained it in position with nasal plugs until consolidation was supposed to have taken place. This method does not seem to have been generally adopted; indeed, we hear nothing more of it and it is not

[1] Read before the St. Louis Medico-chirurgical Society, March 17, 1891.

likely that it ever produced satisfactory results for reasons presently to be stated. Then it was suggested that the cartilaginous septum be incised with cutting forceps of various styles, the sections forced into position and maintained by plugs of various devices. In a recent English work, the old operation of bodily cutting out the most convex portion so as to leave a free communication between the nasal passages, is mentioned with a degree of approval.

Many surgeons, doubtless, have tried different operations, only to find the obstinate cartilage twisted back into its undesired position a short time after removal of the retaining-plugs. The difficulty lies in this simple fact, that the septum-cartilage is highly elastic, and when merely incised and bent into position, if left to itself, is pretty sure to work gradually back; the cicatrix is stretched and the old condition is reëstablished. As to the operation of excision and leaving a hole in the septum, this is contrary to Nature's method and ought not to be regarded as a legitimate procedure. A perforated septum is likely to give rise to constant trouble; the mucus collects and dries upon the margin, forming a troublesome crust; as this is picked off erosion follows, etc. The patient must constantly use unguents or some substitute to keep the edges free. In common with the usual experience, I had not found operative measures satisfactory and have avoided dealing with such cases until last December, when three pronounced cases came under my care. In these, I determined to depart from the customary methods and make a double operation to overcome the tendency of the sections of the incised cartilage to return from their median to their abnormal position. After making the stellate incision with the well-known Steele forceps, I cut across the base of the most refractory segments with a curved knife; this second cutting was made while a finger was held in the opposite nostril, so that the mucous membrane on that side should not be injured, the knife cutting through the cartilage to the mucous membrane. This scheme proved fully successful, the deformity not being reproduced, except in one instance in which the patient returned to his home in the country while the parts were still unconsolidated, and then, contrary to directions, wore the plug only part of the time; he wrote that his nose was again bad—as might well be expected. When last seen, his septum was in particularly good condition. I doubt the expediency of making the secondary incision at the time the first is made with the forceps, as sloughing might follow such extensive interference with the circulation as would be occasioned. Under cocaine, the knife may be easily applied a few days afterward, according to the appearance of the wound. The cuts should be made so as to allow the parts to yield at once under touch of the probe; any less decided result will not insure against subsequent trouble.

I have tried to remedy the deflection in the bony septum by using, after the Steele forceps, one of my own invention, which instead of a stellate knife carries a number of conical pegs; this forceps, when applied, crushes the spongy bone, and by twisting tends, without much injury of the mucous membrane, to break it up sufficiently to enable the surgeon to rectify the position. It has seemed to me that some good was effected in this way. The principle is reasonable. Naturally when there is much thickening of the septum, such excess of tissue must be cut away. It will sometimes be found after rectifying the nasal cartilage that the passage posteriorly is blocked by outgrowths or simple thickenings of parts; these can now be reached and, according to their nature, removed with knife or saw.

ORIGINAL LECTURES.

OVARIOTOMY FOR CYSTIC TUMOR—THE RADICAL OPERATION FOR CANCER OF THE BREAST.

Abstract of a Clinical Lecture delivered at the New York Hospital.

BY W. T. BULL, M.D.,
ATTENDING SURGEON.

GENTLEMEN: The first patient I present to you is a married woman, about thirty years old, who was admitted to the hospital with an enlargement of the abdomen, which had been noticed for a year. Although the enlargement has attained considerable size, the general health is evidently unimpaired. The patient only complains of the weight of the tumor and of pain upon exertion. Palpation of the abdomen readily elicits fluctuation, while a previous examination has failed to detect disease of the uterus. I shall at once pass to the consideration of the proposed method of treatment—*i. e.*, the removal of the tumor by operation. Briefly, the operation will consist in making an incision through the abdominal wall, large enough to admit the hand, and laying bare the surface of the cyst. The existence of adhesions to the abdominal wall will be ascertained by passing a sponge-forceps or sound over its surface. By means of a trocar, the fluid will be evacuated; and then the pedicle, which is usually continuous with the broad ligament, will be ligated and the sac removed. The first incision exposes the aponeurotic layer; the second passes through the linea alba and the subperitoneal fat. Having controlled all bleeding by the application of pressure-forceps and ligatures, the peritoneum is opened and at once the cystic tumor bulges into the wound. The fluid contents having been evacuated by means of a trocar and canula, the greater portion of the sac is brought outside of the wound, and a free opening made with scissors. Fortunately, there are no adhesions to interfere with our emptying the cyst

in this manner, which prevents the contents from running into the abdominal cavity. By passing the hand into the abdomen, the omentum is found adherent over a small area of the upper surface of the cyst. The omentum is separated and ligated with silk, and the sac is drawn out further. The hand is passed into the interior of the sac and detects a second cyst within, which is torn through and its contents allowed to escape. The fluid is darker in color and thicker in consistence than that contained in the other sac. With the hand the cyst is found to fill the pelvis and to be continuous with the broad ligament of the left side and firmly adherent to the posterior surface of the uterus. The left ovary is merged in the sac. The pedicle is only a fold of broad ligament. It is to be tied with a double "chain-ligature" of strong silk, and the sac, after being separated from the uterus, removed with scissors. This step is tedious, and I encounter much troublesome hæmorrhage, which will be gradually controlled by silk ligatures and the thermo-cautery. Having left a sponge temporarily in the left side of the pelvis, I turn my attention to the right ovary, and here I find another ovarian tumor, small in size, with very thin walls. It is desirable that this be removed without rupture of its wall and consequent escape of its contents; but in order to be prepared for such an accident, I shall introduce a large sponge deep down in the pelvis, so as to limit as much as possible the discharge of the contents of the cyst. (The rupture of the cyst proved to be unavoidable, so that after the removal of the sponge, the pelvic cavity was flushed with hot water by means of a funnel and tube.) As there is still a little bloody oozing from the posterior surface of the uterus, I shall place a rope of iodoform gauze in contact with this surface, and in order to be informed as to the recurrence of the bleeding a glass drainage-tube will also be inserted. (The peritoneum was sewed up separately with a catgut suture, and over it the aponeurosis united with catgut and the skin with silk. The external dressing consisted of iodoform and sublimated gauze, held in place by broad strips of adhesive plaster, and over this absorbent cotton so placed as to avoid injurious pressure on the drainage-tube.)

During the next twenty-four hours, at intervals of two or three hours, the condition of the pelvis will be investigated by carefully introducing to the bottom of the well formed by the drainage-tube a small syringe to which a piece of soft catheter is attached, and withdrawing whatever fluid may have accumulated. If no further hæmorrhage occur, the tube will be withdrawn at the end of twenty-four hours, and the gauze after forty-eight hours. If there should be much bleeding, the wound would be reopened and the bleeding-point ligated. If this were not possible, the cavity of the pelvis would be stuffed with iodoform gauze, enclosed in a "handkerchief" of the same material. (Recovery ensued without a complication. The sinus left after the withdrawal of the tube and gauze closed at the end of five weeks.)

The next patient is a woman, fifty-four years old, with

A TUMOR OF THE RIGHT BREAST,

which has been growing steadily about two years. A few months ago the skin began to ulcerate, and since then she has had occasional sharp, lancinating pains, which have become more severe as the ulcerative process has progressed. The general health is good. There is no material increase in the size of the breast—in fact, it appears reduced in size. The nipple is not retracted, as it often is in cases of this kind, but it is not so freely movable as in health. The upper half of the breast is abnormally hard, and the ulcer feels almost as hard as a board. The base of this ulcer is sloughy; the secretion is moderate; and there is an area of inflamed and congested skin at the periphery. The tumor and ulcer are characteristically carcinomatous, the points already noted serving to render the diagnosis quite simple. At a previous examination there seemed to be a slight enlargement of the axillary glands, and although this is not evident at present, we should not on this account be led to confine our operative measures to the breast itself. The duration of the disease in the present instance should induce us to remove the contents of the axilla; but it is a wise precaution to observe in all cases, even when no glands are felt.

To deal with this form of malignant disease radically, one must remove the diseased organ and the overlying sound skin, the fascia of the pectoralis muscle and the contents of the axilla. Do not pay too much attention to the question of securing flaps to cover the wound completely; the main thing is to remove the disease thoroughly. I wish to call your attention to the characteristic gray color, as well as the hardness of the carcinomatous tumor which I have just removed. In prolonging the incision into the axilla, you should follow the border of the pectoralis muscle, stopping at the line of the arm. Having reached the edge of the pectoralis minor muscle, divide the fascia, retract the edge of the muscle, push the fat away, and look for the axillary vein. Continue the dissection to the apex of the axilla, pushing with the handle of the scapel or blunt scissors the fat containing the glands away from the vein and the wall of the chest. Notice that I have exposed an intercosto-humeral nerve, the division of which sometimes gives rise to disagreeable numbness on the inside of the arm. The small arteries and veins are easily seen and clamped before division. I do not yet feel any enlarged glands, but I remove the fat *en masse*. A close examination reveals several small, hard masses, which, on section, are found to present the same characteristic appearance noticed in the portion of breast already removed. This plan of removing the whole chain of glands with the fat *en masse* is preferable to the older method of incising the fat and searching for the enlarged glands; glands which are only slightly involved are thus not overlooked, and at the same time the danger of discharging some of the contents of these glands into the wound is avoided. Having searched carefully with my finger between the two pectoral muscles, to assure myself that there are no diseased glands there, I introduce a rubber drainage-tube into the axilla through an opening made below the main wound, and then bring the flaps together by sutures, taking care, in this case, not to secure complete coaptation, lest by so doing the sutures exert too much tension and give rise to sloughing. All fluid should be carefully squeezed out of the wound, and then by the skilful application of compresses the cavity may be completely obliterated. The whole upper extremity is carefully bandaged to the body so as to secure rest during the process of healing, which is usually unaccom-

panied by fever or much discharge, and ordinarily requires the patient to be confined to the house for ten days or two weeks.

You have seen the operation successfully performed, and may naturally inquire, Is it likely to cure the patient of the disease? I feel constrained to answer in the negative. The reason is, that the disease has already existed for so long a time. If we expect to cure cases of carcinoma by operation, we must adopt operative treatment at a much earlier period. I think we can all accomplish much good by instilling into the minds of the laity a correct notion as to the good results likely to follow early operations for carcinoma, as well as by encouraging them to seek advice much earlier in regard to all abnormal growths, whether apparently benign or malignant. As the average duration of life in this form of cancer of the breast, without operation, is about three and a half years, this patient would be likely to live about one and a half years more if not operated upon; but on account of the pain and discharge from the ulcer, her existence would be a distressing one. With the operation, these features are removed to a later period, and she may enjoy life with no appearance of disease for a number of months. The disease will most likely recur in the scar, or it may appear in some internal organ, as the liver. In either event the operation prolongs life, delays the progress of the disease, and relieves the patient at once of a painful growth. In some instances removal of recurrent growths is advantageous. The cicatrix should be inspected at frequent intervals, and any small, hard nodule appearing in it excised at once. This can be done with cocaine-anæsthesia. I recall two patients, both living at the end of six and ten years respectively after excision of the breast for carcinoma. In both cases several of these little secondary growths have required removal. (The wound healed without complication in two weeks. The axillary drain was removed on the third day.)

CLINICAL MEMORANDA.

CATLIN'S METEOROLOGICAL PAIN-PHENOMENA.

BY S. V. CLEVENGER, M.D.,
OF CHICAGO.

AMERICA has good reason to be proud of the good work of Dr. S. Weir Mitchell in many directions, and he has added to his fame by starting Captain Catlin upon a scientific investigation that will prove of inestimable value to neurology.

Nearly twenty years ago I essayed some observations and tabulations similar to those of Captain Catlin, when I was connected with the meteorological department of the United States Signal Service. Other work interfered with the completion of my calculations, and since the publication of the Captain's synopsis in your journal of May 2d I can clearly see where previous efforts at establishing the relationship of pain and atmospheric conditions have been so very faulty. Observers have generally sought causes in hygrometrical conditions alone, in barometrical fluctuations, in ozone quantities, in wind directions, or in thermal conditions, and have been compelled to rely upon the statements of others as to the time when pain was greatest and least. In Catlin's case, the sufferer himself being the observer and a competent scientist, we for the first time have the advantage of reliable information upon this important subject.

Unless one has undertaken a systematic series of meteorological observations he cannot appreciate the enormous amount of work involved therein, and it is to be hoped that our Weather Bureau may take proper cognizance of Captain Catlin's work and incorporate it in the general meteorological literature, so that these researches may be built upon by future observers. By studying, as the Captain has done, the entire range of phenomena and their association with pain, certain very definite deductions are gained, and single factors, such as moisture, sunshine, etc., can then be properly assigned their modifying influences.

Pain predictions may some day be announced by the Signal Service, if it can be found that a useful purpose can be subserved thereby, particularly if Catlin's observations result in methods of mitigating the agony that so many of the limbless suffer. And why may not prevention follow next upon the knowledge of the cause? It would be well to thoroughly try the possibility of neutralizing such causes of pain, no matter how troublesome the process may be at first, for simplification of means would surely follow any success. Captain Catlin and Dr. Mitchell would be most competent to discuss this next phase of their researches, and it is hoped that they may find the time to do so.

A CASE OF VARICOSE VEINS OF THE BROAD LIGAMENT.

BY W. REYNOLDS WILSON, M.D.,
OF PHILADELPHIA.

THE patient, Mrs. C. B., aged thirty-five, was operated upon at the Lying-in Charity on April 27th. Both ovaries were removed on account of the following symptoms: She had suffered for a long time from pelvic pain, backache and hæmorrhage, continuing, on an average, for two weeks from the beginning of each menstrual period. She had been compelled to pass most of her time in bed. She had had six children, and, since the birth of her last child, three miscarriages.

When first admitted to the hospital, the patient presented the following conditions: She was suffering, to an extreme degree, from the symptoms described above. Locally, the os was deeply lacerated bilaterally, an extensive cicatrix evidently being the result of a former unsuccessful operation. The uterus was enlarged, movable, and in normal position. There was a movable tumor, the size of a walnut, to the right of the uterus, very sensitive on pressure. The left broad ligament was tense, but no distinct tumor could be made out.

At the time of the operation the right ovary was found to be cystic, the tube normal. The left ovary was also cystic, but not so much enlarged as the right, the tube on this side being also normal. In the left broad ligament there was a plexus of enlarged veins. On examination *in situ* they were three-eighths of an inch in diameter, tortuous, and evenly dilated in their whole extent; no knotty appearance was observed. This condition existed in the left ligament alone, the absence of adhesions admitting of a careful inspection of both liga-

ments. A double ligature was introduced between the ramifications of the dilated veins, and, after emptying the veins by pressure, tied on either side.

This case is similar to those reported by Dudley (*New York Med. Journ.*, xlviii., 147), Hirst (THE MEDICAL NEWS, lvi., 538), and Kelly (*Johns Hopkins Bulletin*, 1889–90, 223), and may be considered in connection with an article by Malins on "Varicose Veins of the Broad Ligament" (*Amer. Journ. of the Med. Sciences*, 1889, xcviii., 340). It is remarkable that Tait, in a paper on the "Pathological Importance of the Broad Ligament" (*Edinburgh Med. Journ.*, 1889–90, xxxv.), in writing of pelvic hæmatocele and intra- and extra-peritoneal hæmorrhage from a rupture of the veins of the broad ligament, fails to allude to a varicose condition of these veins as a distinct pathological condition, except in connection with hæmorrhage due to a sudden arrest of menstruation where the veins are acutely distended.

The case I report is also of importance in illustrating the occurrence of varicose veins (most frequently) in the left ligament. They occur on the left side of the female for the same reason as in the male—namely, for the reason that in both sexes the spermatic vein on this side enters directly into the renal vein and at right angles to it. There is no doubt that the symptoms were consequent to this pathological condition. In reference to this Kelly writes: "Whence the pelvic pain arises in these cases it is impossible to say; it is equally impossible to say that these great distended vessels may not play a very important part in the production of the pelvic and lumbar malaise." Those who have worked upon this subject agree in the propriety of operating for the ligation of the veins when the ordinary palliative treatment has proved unsuccessful; the future of the case reported will, I hope, confirm this decision.

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CURRENT LITERATURE.

OPERATIVE TREATMENT OF TUBERCULOUS NEPHRITIS.

MADELUNG'S experience is, under certain conditions, in favor of operation. The main obstacle to a more general application of surgical therapeutics to tuberculous nephritis is the difficulty, on the one hand, of making a positive diagnosis; and, on the other hand, of locating the lesion positively on the right or left side. The most positive proof of tuberculosis in the genito-urinary organs, tubercle bacilli in the urine, is difficult or impossible of establishment. The attempts to separate small numbers of bacilli from a larger quantity of urine have not yet led to practical results. More promising as a means of diagnosis appears to be the inoculation-test from suspected urine on animals; but it is objectionable that the length of time required for the development of general secondary miliary tuberculosis is at least four weeks. In cases in which bacilli were found, Madelung experienced great difficulty in excluding tuberculosis of the bladder. Dysuria and strangury may be referred to a diseased kidney. Inspection by the cystoscope, which has proved valuable in other affections, gave uncertain pictures. Digital palpation of the female bladder has several times been followed by permanent paralysis of the sphincter vesicæ muscle.

If the diagnosis of tuberculous nephritis has been positively established, difficulty may be experienced in determining which of the two kidneys is affected, or whether both are diseased. Cases have occurred in which the kidney, from the subjective symptoms, the palpable tumor, etc., suspected to have been affected, has been found, post-mortem, much less involved than its fellow on the opposite side, which was not enlarged and in which pain had been moderate, or severe only for a short period. In such cases, and in those rare ones in which one kidney is congenitally absent, the removal of the only renal organ must inevitably be fatal. The author reports a case which strikingly illustrates the possibility of such an error. He holds that even Thornton's method of exploratory abdominal incision and direct palpation of the suspected kidney gives no positive clue in locating the affection. Catheterization of the ureters has been proposed as another means of diagnosis. To facilitate the introduction of the catheter the author in two cases made a supra-pubic incision, as in lithotomy. The openings of the ureters were easily located, but he failed to introduce anything larger than a fine probe. Madelung disputes the diagnostic value of nephrotomy. The exclusion of disease in one kidney by draining off the urine of the suspected organ through an opening made into it, and finding the urine free from pus, is possible only in cases of unilateral non-tuberculous pyelitis or pyo-nephrosis, but usually not in tuberculous unilateral nephritis. It remains doubtful whether the fistulous opening reaches the pelvis of the kidney, since, to accomplish this, a more or less thick layer of kidney-substance has to be perforated, as when the kidneys are tuberculous the pelvis is usually not much, if at all, dilated. If only one calyx is reached, or an abscess in the kidney-substance be found, the object of the operation (to drain off the urine by another channel and prevent its escape by the ureter) will not be attained. According to Madelung, the most certain way to establish the diagnosis is to expose the kidney and examine its condition. If the latter does not account for the gravity of the signs and symptoms present, extirpation should not be performed. Since, then, initial stages of the disease cannot positively be diagnosticated, and since it scarcely admits of doubt that spontaneous recovery may take place in case of the small foci of tuberculous ulceration, the operation seems indicated only in the later stages of the disease, in which spontaneous recovery cannot be expected.

With the present means of diagnosis the object of the operation must be to remove inflammatory products which cannot be spontaneously eliminated, and thus to free the patient from unspeakable suffering. Manifest tubercular disease of other organs, except advanced cystitis, is no contra-indication to the operation.

On the principles laid down, Madelung performed nephrectomy in four of twelve cases of undoubted tuberculous nephritis. On the ground of

his own experience and on that of most other writers he disputes even the palliative value of nephrotomy.

He considers the extra-peritoneal method of operation alone admissible, and advises a free exposure of the organ to facilitate the removal of fragments of tuberculous tissue, as portions of a cyst wall, of the pelvis, and the ureter. He prefers the lateral oblique incision, joining with it, if needed, above or below, transverse incisions running toward the spine. To prevent slipping of the ligature it was found advantageous to allow a small piece of the kidney to remain, to be subsequently removed. The ureter is severed as low as possible, and the deep wound is closed with catgut sutures. Tampons of iodoform-gauze were used to fill the cavity. The wound healed kindly, but fistulous tracts remained for three-fourths of a year and one and a quarter years respectively, but finally also healed. Madelung believes that the convalescence of his cases was materially aided by continued internal treatment with creasote.

Little can be learned from the literature regarding permanent cure by this operation. Madelung collected sixty cases, reported since 1872, most of them from American and English literature. Eleven cases died immediately after the operation, and five in the first five months subsequent to the operation. The number of cases reported as permanently benefited is very small. Bardenheuer has obtained the best results. Four cases of nephrectomy, though operated on at an advanced stage of the affection, with the vitality considerably reduced, were living at the time of his communication, free from suffering, and in a condition justifying the hope of a permanent cure. It is a peculiar fact that the quantity of urine voided, increased shortly after the operations.

The author then adds a detailed report of the four cases of nephrectomy and one of nephrotomy in which nephrectomy was performed later on by Prof. Thierfelder. They were all women, in the second or third decennium of life, all permanently confined to bed, and in such a condition that death seemed imminent.—*Archiv für klinische Chirurgie*, vol. xli., No. 2.

CASE OF HÆMOGLOBINÆMIA AND HÆMOGLOBINURIA FOLLOWING INTRA-UTERINE USE OF CARBOLIC ACID.

RICHARD KRUKENBERG reports the case of a woman, twenty-eight years old, who had borne three children and was under observation for threatened abortion. After a chill, an embryo of two months and part of the membranes were cast off. The patient was pale, completely conscious and without special complaint. The pulse was 96 and regular, respiration not accelerated; the heart showed signs of a compensated mitral insufficiency. Chloroform was given, and the uterus curetted; about one and a half tablespoonfuls of membranes were removed, one little piece being greenish-gray. The uterus was then washed out with a 2.7 per cent. solution of carbolic acid, Olshausen's modification of Bozeman's catheter being used. The eyes of the catheter became plugged with particles of tissue. About one quart and a quarter of the fluid was injected, when the pulse became small, and then ceased. The douching was immediately stopped, the uterus expressed bimanually, and the woman, who was pale and cyanotic, placed horizontally. The pulse, when it returned beat 100–112 per minute, two strong beats being followed by a weak one. Artificial respiration was necessary. The pupils were small and did not react; the extremities were flaccid, without tremor or spasm. The lungs became œdematous. After the deep coma had lasted two hours, it yielded gradually to the employment of powerful analeptics and irritants to the skin; but the intellect remained clouded. The patient muttered unintelligibly, was restless, breathed stertorously, and presented a pale, cyanotic face, covered with cold sweat. Two hours after the douching the bladder was emptied of five fluid-ounces of urine, dark blood-red in color, resembling raspberry juice. It smelled of carbolic acid, and after being filtered had a specific gravity of 1021. The fluid contained albumin, peptone, and 0.262 per cent. carbolic acid, estimated as tribromphenol in the acidulated distillate of the urine. The normal quantity of carbolic acid in the urine, according to J. Munk, is 0.0034 per cent. Spectroscopic examination demonstrated the presence of oxyhæmoglobin, with characteristic absorption bands in yellow and green. The reaction of the fresh urine was acid, the specific gravity when unfiltered, 1024. On boiling, and with addition of acetic acid, there was a blackish-brown precipitate, which after standing a day filled one-third of the glass. Hæmin crystals were obtained from the sediment, and Heller's test for blood gave a positive result. The sediment also contained red blood-cells, epithelium, no casts, but golden-yellow clumps, partly firmly granular and partly homogeneous.

About four hours after the abortion the patient regained consciousness, complained of great weakness, and with difficulty expectorated a profuse, frothy mucus. During the night she had a brown stool, and urine involuntary passed. She was delirious, and so restless that the moist pack ordered for her had to be removed. Toward daybreak it was noticed that she was very much jaundiced. The urine (one-half to three-quarters of a quart) was raspberry-colored, but unfortunately was thrown away. On the following day, the temperature was 98°, the pulse 110; there was sensitiveness over both kidneys and the spleen; the spleen was enlarged. The patient complained of headache, great weariness, loss of appetite, and frequent desire to urinate, with pain on micturition. A day later considerable swelling of the liver was detected. The jaundice continued, with the diffuse catarrh of both lungs. There were slight chills. The jaundice slowly disappeared, the catarrh persisted, the swelling of the spleen increased, while signs of peritonitis and of œdema were entirely absent. The urine contained a few red and numerous white blood-cells, much-clouded kidney epithelium, very few epithelial casts, but extraordinarily numerous and large hæmoglobin cylinders, yellowish-red to

golden-brown in color. The patient died in coma, following a uræmic attack. The highest temperature observed was 102.1°. The pulse shortly before death remained under 100.

The following symptoms were prominent: 1. Oliguria (seven ounces of urine in twenty-four hours as the maximum), which increased almost to complete anuria. 2. Complete anorexia; violent vomiting, which made nourishing in the usual way impossible; the vomitus smelled decidedly ammoniacal. 3. Brownish, scanty discharge of foul odor from the vagina.

The autopsy confirmed the clinical diagnosis. The author reviews other cases that have been reported, and expresses the opinion that the symptoms produced were due to a specific toxic action of the carbolic acid, which decomposes the hæmoglobin and the red blood-cells. Krukenberg, nevertheless, concludes that when the necessary precautions are used, carbolic acid is the most serviceable intra-uterine antiseptic, and the one to be preferred to all others. —*Zeitschrift für Geburtshülfe und Gynäkologie*, Bd. xxi., Heft 1.

DISTURBANCES IN METABOLISM FOLLOWING LONG-CONTINUED CHLOROFORM NARCOSIS.

CHRONIC chloroform poisoning has been noted by Casper, Langenbeck, and Behrend, but their cases have attracted but little attention. Nothnagel, in 1866, experimented upon dogs, and after death was able to demonstrate fatty degeneration of the heart and liver.

Professor A. Kast and Dr. B. Mester refer to these early cases and to Nothnagel's experiments, and also to the much more recent experiments of Ungar, Strassmann, and others. One of them had previously investigated the influence of chloroform narcosis upon the excretion of chlorides in the urine. The chlorides were found to be increased, the animals exhibited a series of disease symptoms, and failed in nutrition and weight, in spite of the fact that both before and after narcosis they were kept upon meat food freed from chlorine. The inference is that chloroform effects a toxic disturbance of nutrition.

Kast and Mester, struck by the analogy of the excretion of the chlorides as an after-effect of chloroform-narcosis to the chlorine tissue-change in other severe disturbances of metabolism, turned their attention to the excretion of the sulphurous substances in the urine. They examined the urine of fifty or sixty women shortly after chloroform narcosis in the Freiburg gynecological clinic, and that of ten other patients from the surgical clinic. The urine was examined qualitatively and quantitatively for sulphur compounds. About thirty control tests were made. Unoxidized sulphur was found to be increased largely. This is regarded as showing the profound effect of prolonged chloroform narcosis on the metabolism of albumin. As to the duration of this metabolic change, the urine showed the lead reaction for sulphur in one case as early as an hour after the chloroform narcosis, which had lasted two hours; usually it is detected on the second day, and in one case it was present on the fifth day. The duration of the increased excretion of sulphur-holding substances coincides pretty accurately with the duration of the well-known reducing properties of chloroform urine.

As to the nature of the sulphur compound, Kast and Mester believe it to be cystin, or a body resembling it.

Urine, under the influence of chloroform narcosis, becomes highly acid, due apparently to the considerable quantities of chlorine, which occurs in the form of hydrochloric acid.

The conclusions of Kast and Mester are as follows:

1. Chronic chloroform poisoning, that is to say, the toxic action of large doses of chloroform, given either internally or by prolonged inhalation, is recognizable both in animals and in men.

2. It manifests itself by a fatty degeneration of the the organs. There is a lessening of the body weight, an increased excretion of chlorine (Kast), and of oxygen (Strassmann), showing an increased consumption of albumin in animals. In man, as the result of prolonged chloroform narcosis, a sulphur compound, resembling cystin, is thrown off in considerable quantity. There is also a constant and more or less considerable urobilinuria.

3. In relation with the form of excretion of the received chloroform stand—(1) the reducing property of the urine through the formation of a glycuronic acid combination, and (2) the considerable increase in the acidity of the urine following chloroform narcosis.—*Zeitschrift für klin. Medicin*, Bd. lxxx., Hefte 5, 6.

LEUKÆMIA IN AN INFANT.

ORTNER (*Jahrbuch für Kinderheilkunde*, Bd. xxiii. Heft 3, 1891) reports the case of a female child, eight and one-half months old, always pale, who was seized, four or five months before coming under observation, with diarrhœa and vomiting, followed by emaciation and increasing pallor. For two months a progressive increase in the girth of the abdomen had been noticed, especially marked at its upper part and on the left. The mother of the child had borne nine other children, of whom six had died at ages varying from eleven to eighteen months, with symptoms of gastro-intestinal catarrh, all having been pale, feeble and rhachitic. There had been no miscarriage or premature labor. The first child, fifteen years of age, presented evidences of past rhachitis. While nursing the second child, together with another infant, two ulcers formed on one of the nipples, but no secondary phenomena were observed. The strange child was said to have had a cutaneous eruption and died before it was a year old. The mother's own child presented nothing abnormal. The third child, born twelve months after the second, died when it was twenty-one months old, it was said, with an enlarged spleen. Of the remaining children, the sixth and eighth, six and four years of age respectively, were living, but anæmic and presenting evidences of rhachitis.

The child was small, poorly nourished, pale, the

skin wrinkled, the temperature normal; pulse, 128; respiration, 28. The fontanelles had not closed and the occiput yielded to pressure. The prominences on the cranial bones were marked, the teeth were absent, the epiphyses of the long bones were thickened. There were no evidences of syphilis. The area of hepatic dulness extended two fingers' breadth below the costal margin in the nipple line. The lower border of the right lobe of the liver was palpable. The spleen was perceptible as a palpable tumor, extending almost to the crest of the ilium and the median line. The lymphatic glands in the groins, the axillæ, the supra-clavicular fossæ and behind the angles of the jaw, were firm, but not much enlarged. No parasites or ova were found in the stools. The red blood-corpuscles were pale, small, ill-shaped and not disposed to form rouleaux. There were 2,495,000 red and 166,000 white corpuscles to the cubic centimetre, 1:15. The hæmoglobin was estimated at 55 per cent. The eye-grounds were anæmic. Treatment by inhalations of oxygen was instituted. The spleen and the lymphatic glands increased in size. Two months after admission to the hospital, lobular pneumonia developed, together with submucous and subcutaneous hæmorrhages, and death resulted in a few days from collapse.

The autopsy disclosed, in addition to the evidences of rhachitis, lobular pneumonia, parenchymatous nephritis and fatty degeneration of the heart, decided enlargement of the spleen, slight enlargement of the liver and swelling of the mesenteric, inguinal and axillary glands. Sections of the spleen showed irregular extravasations of blood and the presence of an excessive number of lymphocytes, with an increase of the cellular elements of the Malpighian bodies. The cortex of the kidneys contained numerous areas of small-celled infiltration; the vessels were distended with blood; there were changes in the glomeruli and tubules. There was an abundance of cells in the cortical follicles of the mesenteric glands, the lymph sinuses being crowded with round cells. The follicles of the small intestine were enlarged.

THERAPEUTICS OF ERYSIPELAS.

GOTTSTEIN refers to a communication of his published in the *Therapeutische Monatshefte*, March, 1889, in which he adduced proof that, contrary to the accepted opinion that antiseptics dissolved in fat lose their activity, corrosive sublimate in combination with lanolin preserves its disinfecting properties. Wenderoth has compared the effect upon anthrax bacilli of a mixture of sublimate, lanolin, and vaseline, and of one containing sublimate and olive oil. The proportions of the former were as 1 to 1000. The sublimate and olive oil destroyed the anthrax bacilli in a time between thirty-three minutes and two hours, while the sublimate and lanolin accomplished the same result in from nineteen and a half to twenty-six and a quarter hours; as it takes so long, however, it cannot be reckoned among the active disinfectants. Moreover, it was found by Wenderoth that an older mixture loses its strength in course of time; it may be that the bichloride becomes decomposed gradually into calomel.

These results of Wenderoth in part conflict with those of Gottstein; the latter suggests that the reason may be found in the different management of the experiment.

Wenderoth's experiments in the treatment of erysipelas with sublimated lanolin are more important and of general significance. The erysipelatous portions of the skin, and also a part of the skin bordering upon them, were generally covered twice a day with a thick layer of the sublimated lanolin, over which cotton is laid. There was no internal treatment, except the administration of wine. Of the ten cases treated by Wenderoth in the manner described, all but two were characterized by the limitation of the erysipelas to the affected parts, and by a short duration. In one of the two exceptional cases, the erysipelas had attacked both arms, and the general symptoms were severe. On the seventh day there was a decline. In the second case, in spite of the treatment, the erysipelas extended beyond the buttocks, and was checked on the thirteenth day with injections of corrosive sublimate.

Gottstein has treated a case with the sublimated lanolin. The patient was a woman fifty-six years old, who had suffered severely several years before, and for a long time, with facial erysipelas. She was taken ill with high fever and severe general symptoms, such as delirium. The next day there was erysipelas of the right side of the face and a temperature of 103°. The sublimated lanolin was energetically applied. The next day the temperature was 100.5° and the erysipelas was subsiding. On the third day the temperature rose again to 102.3°, owing to involvement of the scalp. On the fourth day the temperature fell to 97.4°, and convalescence began. The patient was out of bed in eight days from the beginning of the attack.—*Therapeutische Monatshefte*, April, 1891.

A CASE OF PURULENT PERITONITIS CURED BY ABDOMINAL SECTION.

HENOCH (*Berlin. klin. Wochensch.*, January 26, 1891) has reported the case of a girl, four years old, without hereditary taint, admitted to his clinic with vomiting, colic and diarrhœa, which had existed for a month, and a temperature of 101.8°. In a few days the abdomen became distended; the pallor and emaciation increased. The child lay still, with the legs drawn up, movement giving rise to pain. A little above the umbilicus, fluctuation was detected over a limited area. Percussion dulness was more extended. The diaphragm and the heart were displaced upward. By an exploratory puncture a little thin pus, containing no bacilli, was removed. Through an incision, an inch long, between the umbilicus and ensiform cartilage two quarts of thin pus, mixed with coagula, were removed, and drainage provided. Uninterrupted recovery ensued. Henoch did not believe the peritonitis tuberculous, not only from the failure to find bacilli but also from the acuteness of the attack and the rapidity and completeness of recovery.

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THE ANTAGONISM BETWEEN MICROÖRGANISMS AND THE TREATMENT OF INFECTIOUS DISEASE.

THE first attempt to diminish the virulence of pathogenic microörganisms by the antagonistic action of other microörganisms was made by PASTEUR, who, by inoculating fowls with the virus of chicken-cholera, rendered them resistant to anthrax. FEHLEISEN, NEELSEN, CANTANI, PAVONE, PRIMROSE-WELLS, BABTCHINSKI, HEER, and others have since adduced a number of experimental and clinical facts which are rather favorable to the therapeutic application of the antagonism between microörganisms. An analogous antagonism is seen in the higher forms of vegetable life, as evidenced by the crowding out of some plants by the growth of other varieties and the tendency of forests to present more or less uniformity of kind, in spite of the fact that the soil may be quite as fertile for one variety of forest-growth as for another. The subject has received attention at the hands of BOINET (*Bull. Gén. de Thérap.*, September 30, 1890), who has studied the action of the yeast of beer upon the development and virulence of the bacilli of typhoid, of anthrax, and a number of other pathogenic bacteria. Observations were made upon tube-cultures of the microörganisms, and were to a certain extent supplemented by inoculations of animals with the mixed growths. Culture of the yeast grown with typhoid bacilli caused a notable alteration in the morphology of the latter, the individual bacilli growing to abnormal lengths, with a tendency to a wavy outline; these peculiarities were also apparent in subsequent generations. Anthrax bacilli suffered little change, except possibly a diminution in length. Both in culture and inoculation experiments the presence of the yeast appeared to exert an exaltative influence on the bacillus pyocyaneus, increasing its rapidity of growth and its virulence in the body. While it cannot be said that the experiments of BOINET have yielded any positive results clinically, it is certain that the association of yeast with pathogenic microörganisms does not heighten their virulence, while there is evidence of a diminution of activity of the infectious agent. For example, while ordinarily in anthrax the liver is found to contain large numbers of bacilli, but few could be found in the livers of animals dead after inoculation with the mixed growths. In typhoid fever, more positive favorable results were obtained in 1888 by HEER (*Deut. med. Zeitung*), who succeeded in modifying the diarrhœa by the internal administration of commercial beer-yeast. He also records having favorably influenced patches of thrush and diphtheritic deposits by local applications of yeast suspended in glycerin.

The antagonistic action of microörganisms among themselves is frequently witnessed in the laboratory, although in these attempts at isolation by natural selection absolute purity of growth is rarely obtained, because the necessary conditions are wanting. Clinically, little study has been devoted to the results of the coincident occurrence of infectious diseases to determine whether the intensity of one or the other is diminished or exaggerated. In WOODWARD'S study of the relations of the malarial and typhoid infections, as presented in the medical records of the late war, it is recognized that malarial infection modified the severity of the attack as well as the mortality of typhoid fever, as compared with the course and termination of the ordinary type of typhoid fever as seen during the same time and under the same external conditions. Moreover, in the absence of knowledge of the nature of the antagonistic influences, the clinical and experimental value of alcohol—a product of microörganismal activity—in the suppression and extermination of infectious agents may be cited in justification

of the line of thought suggested. It is not at all impossible that substances analogous to alcohol may be produced which, if properly understood and employed, may have a wider field of applicability in the control of disease. It is possible that the overpowering of one bacterial growth by another is due to the elaboration of some such controlling agent, although the same result may be due to excessive growth and the effects of crowding. Whatever the method, this suggestion offers a line of study promising to be of no little importance in combating disease. The modification of a severe type, rendering it less severe, if not eradicating it entirely, cannot but lead to the most positive and widespread benefit, especially in the management of epidemics. Non-pathogenic microörganisms, as those contained in the yeast employed by HEER and BOINET, should first be studied. The results may only partially succeed in diminishing the virulence of the graver infections, but even the negative knowledge thus derived is not unlikely to prove of value in relation to exposure to infection; positive results would in the highest degree be satisfactory to those who strive to attain the ideal in the management of infectious diseases—that is, their eradication.

THE CART BEFORE THE HORSE.

IN his "Plea for the Scientific Study of Insanity" (*Brit. Med. Journ.*, May 30, 1891) DR. TUKE tries to rally the materialists for another charge against the strongholds of the well-entrenched enemy. "All insanities are symptoms of morbid conditions of the brain," is the text of the discourse. But the author's bitter complaint against the indefiniteness attending all research into the etiology of depraved mental states will hardly be overcome either by the histological or the gross anatomist. It will be a long day or two before the microscope or the dissecting-knife reveals the supposed lesions of mental disorders. It is superb effrontery to claim as scientific only the investigation that starts out with the assumption that function is the product of structure, when the developmental history of every organ and every organism in the world is a crying demonstration that function always precedes structure. It takes tendency and purpose, or, in other words, mentality, a long time to create its instruments that we call organisms, and then the gentlemen who loathe teleology gather about the mechanism and say that the tool made the toolmaker. Before founding the pathology of mental disease upon a crude bit of dogmatic deduction the would-be psychologist should answer two questions: 1. Is the pseudopod of an amœba an organ or not? and, whether the question be answered affirmatively or negatively, 2. Does the pseudopod create the desire of locomotion or does the desire create the pseudopod?

A SIGNIFICANT QUESTION.

THOSE who have been given to thinking that women are incapable of competing with men for the highest intellectual acquirements and prizes have been repeatedly startled during late years to learn, especially from England, of the astonishing success of young women in competitive examinations in fields of study and research deemed especially preëmpted by the masculine mind.

There have been few young modern medical students who have given more brilliant promise of future fame than DR. ADELE MCCULLOCH KNIGHT, of South Australia. Honors, prizes and distinctions came to her as if spontaneously. She has just died at Vienna at the age of twenty-five. One cannot help wondering if, under the intense stimuli of a noble ambition, a laudable rivalry, and a fervent love of science, such mental development or acquirement is not the sad evidence of the prodigal expenditure of a life's vital revenues in a few brief, splendid years.

In one of the great cities of the Eastern United States it is a subject of common and eulogistic remark that the course of study is more thorough and the examinations more rigorous in the Women's Medical College than in the other prominent and dignified colleges for men. "In a competitive examination the girls will whip the boys every time." But among these noble girls has there not possibly been over-strain? Does there remain the strength to wrestle with Life?

COMMISSIONS BY DRUGGISTS TO PHYSICIANS.

ACCORDING to the President of the California State Medical Society the sentiment of self-respect and professional honor among apothecaries and doctors must in California, and especially in San Francisco, be at low ebb. It appears that the most impudent boldness in percentage-giving and taking is very prevalent. Prescriptions are sealed in

envelopes, telephoned directly to the drug-store, or written in cipher, outrageous prices being demanded from the patient in order to pay the doctor from 30 to 75 per cent. It is hard to believe that men can stoop to such wretched practices. In the Eastern cities, if the custom exists at all, it is well concealed or so sugar-coated that it becomes a far more delicate proceeding. Essentially, of course, there is no difference in morality between taking an expensive Christmas present and having in the druggist's shop a lock-box of which the physician alone has the key, and in which is deposited a dollar for each prescription received. It is gratifying to know that with us even the complimentary gifts are rarely offered or received. We have heard of a druggist who was greatly surprised to find himself credited by a hospital report as the donor of much fine cologne and toilet sets galore. The doctor had considered himself as only the transfer agent.

THE LONDON HOSPITALS AND CONVALESCENT HOMES.

FROM the *Lancet* Hospital Sunday Fund Supplement we learn the extent of the medical charitable work done in the care of the sick of the great metropolis. During the year 1890 the average number of beds daily occupied was 6143, and the total number of in-patients received was 78,033. The number of out-patients' visits reached the enormous total of 1,158,026. This entire work was done at an expense of $3,031,290. An interesting and peculiar phase consists in the convalescent homes, of which some 15,000 patients enjoyed the benefits. It is a matter of regret that in the United States we have nothing corresponding to this excellent system. A patient lingers on during the long weeks of slowly increasing strength, in close intimacy with all forms and degrees of illness about him, depressed by unpleasant sights and sounds, at a time when the condition of the mind must powerfully exercise an influence upon nutrition and the restoration of vitality. A change to more agreeable surroundings would often be of double service to the over-crowded hospital and to the convalescing patient.

THE SHEPPARD ASYLUM.

THE second largest private bequest ever given to found a hospital for the insane was that of MOSES SHEPPARD, of Baltimore, who in 1857 left $560,000 in trust to establish an institution for the care and treatment of members of the Society of Friends who might become insane. The trustees out of the income have expended about $880,000 in the purchase of some 377 acres of land near Baltimore and in the erection of three fire-proof buildings, each 365 feet long, from 75 to 200 feet deep, and from two to four stories high, fitted with the best modern improvements as to ventilation, heating, water-supply, etc. The original endowment fund, despite these outlays, has even been increased, and the asylum will be supported by the interest of $600,000 in well-invested securities. DR. EDWARD M. BRUSH, at present of the Pennsylvania Hospital for the Insane in Philadelphia ("Kirkbride's"), has been selected superintendent. DR. BRUSH is an alumnus of the Buffalo Medical College, graduating in 1874. As a specialist he is well known to the profession, and will bring to his new field of labor a well-trained mind and a rich experience that fit him exceptionally well for the great work he has to do.

THE DOCTOR IN THE DRAMA.

IN the new play, *Margaret Fleming*, lately produced in Boston with so much interest and success, it is pleasing to find the family physician, in a typical American home, represented as having so dignified and honorable a function. According to the playwright, he adds to his titular duty that of the old-time spiritual and moral adviser. He is the family friend, pointing out the path of duty, and encouraging the weak and erring to walk in it. Since MOLIÈRE, the doctor in the play and in real life has greatly changed both rôle and character. It becomes a question if the parson has indeed been so derelict in duty that the medical man must also assume a part of that worthy's office in addition to his own. Between city and suburban practice there is, doubtless, a difference in this respect. In village and rural life hundreds of families have no warmer or truer friend than the family doctor. The business necessities and manners of the city practitioner may bring greater rewards of certain kinds, but ——.

A NOVELIST'S ANATOMICAL KNOWLEDGE.

THE critics are advising that brilliant cometary novelist, RUDYARD KIPLING, to be a little more careful about his anatomical facts before writing his next story. One of his heroes is reported as being permanently blinded by a sabre cut on the forehead, which *injured the optic nerve*.

SOCIETY PROCEEDINGS.

PHILADELPHIA ACADEMY OF SURGERY.

Meeting of April 6, 1891.

THE PRESIDENT, WILLIAM HUNT, M.D., IN THE CHAIR.

DR. JOHN H. BRINTON presented

A TUBE FOR THE REMOVAL OF FRAGMENTS OF BONE IN LITHOLAPAXY

—a modification of that of Otis. After crushing a stone there is often difficulty in removing the fragments, partly due to the character of the tube employed. In the tube demonstrated the curve at the end was so adjusted that the instrument is flat in the bladder while the bulb is perpendicular. The tube is provided with a stylet which completely closes the fenestra.

Dr. Brinton also showed a modification of Thompson's crusher. The blades are so arranged that when the stone engages, it slips up toward the bend of the blades where the force can be most advantageously applied. The blades are short, so that the instrument can readily be turned in the bladder.

DR. JOHN B. ROBERTS related that, in one case, after breaking the stone and washing out considerable of the débris there remained a portion of the stone, which was very hard. Exerting a good deal of force on the screw, he stripped off the thread of the instrument, and, having no other lithotrite at hand, he was compelled to make an incision to deliver the remainder of the stone. In another case, there were many fistulæ in the scrotum, and one in the penis in front of the scrotum, as a result of rupture of the urethra. After opening the fistula, and introducing a sound through the urethra, a good-sized stone was detected in the bladder. The ordinary operation of lithotomy was then done, and the stone removed. The complication had not been suspected either by the patient or his physician.

DR. JOHN B. DEAVER showed a stone weighing 420 grains, removed from a child three and a half years of age by supra-pubic cystotomy. The stone was too friable for removal with the forceps, and was brought to the opening in the abdomen by a finger introduced into the rectum. The child made an interrupted recovery, and was entirely well in three weeks. At the end of two weeks the urine was passed through the urethra. The bladder wound was not closed.

DR. W. W. KEEN stated that air for injection into the bladder may be readily sterilized by passing it through a a mass of cotton placed over the end of a Davidson's syringe.

DR. NEILSON read a report of

TWO CASES OF EXTENSIVE COMPOUND DEPRESSED FRACTURE OF THE SKULL,

published in THE MEDICAL NEWS of May 30, 1891.

DR. W. W. KEEN stated that the two cases reported illustrated the results to be attained by modern methods of treatment. The introduction of the finger between the dura and the bone in searching for bleeding vessels is, of course, new. It was Dr. Keen's practice not to ligate any vessels whatever in the scalp. Hæmostatic forceps were applied and removed one by one, and the point of hæmorrhage inspected; if bleeding continued the hæmostatic forceps were replaced. Sutures were carefully introduced at these bleeding-points, the flaps were brought together, and in this way the hæmorrhage was controlled. The conditions were different when there are bleeding vessels in the dura of the brain. In such case ligatures are absolutely necessary. In the dura the circular Hagedorn needle is the best to control the hæmorrhage. The rat-tooth forceps is to be recommended for lifting the membrane. The dural vessels occasion no difficulty; the vessels of the brain are more troublesome. It is to be feared that if gauze packing be permitted to remain for eight or twelve days, it may give rise to irritation of the brain, while any advantage to be gained by pressure will be had in two or three days at the longest. Drainage is to be judiciously employed in cases in which there are bleeding-points not absolutely secure; but in ordinary operations upon the brain, after arresting the hæmorrhage, Dr. Keen has discarded drainage without resultant harm. In one case a little puffiness was noticed ten days after the operation. The introduction of a probe and the separation of the scalp were followed for four or five days by a discharge of dark, tarry-looking blood—undoubtedly the remains of a liquefied clot, which had given rise to a little local irritation and elevation of temperature. As an illustration of the possibility of danger, in another case in which the skull was a half-inch thick, drainage was continued for three days, and the tube removed; hernia cerebri was nevertheless threatened.

In any subsequent case in which it became necessary to remove a portion of the dura leaving an opening in it, Dr. Keen proposed to take a portion of the scalp sufficiently large to close the dural opening and secure it in such a way as to overcome the tendency to hernia cerebri.

DR. NEILSON concluded by stating that the criticism of Dr. Keen was based upon a misconception. The time at which the iodoform gauze was removed was from the fifth to the eighth day, not from the eighth to the twelfth. His experience had been wholly with cases of severe injury, in many of which the brain was lacerated, and in these cases drainage seemed safest, as a provision for the escape of blood and other fluids.

Adjourned.

Meeting of May 4, 1891.

THE PRESIDENT, WILLIAM HUNT, M.D., IN THE CHAIR.

DR. JOHN ASHHURST, JR., reported a number of cases in which he had performed

OPERATIONS UPON SOME OF THE LARGER NERVES.

In several cases he had sutured nerves as a primary operation. In one case of excision of the elbow-joint, the parts were so distorted and matted together that section of the ulnar nerve was unavoidable. The cut ends were immediately sutured, and the patient recovered with a limb as useful as if the nerve had not been divided. We are all familiar with the advantages of suturing nerves as a primary operation, but there is still doubt on the part of some surgeons as to the advantage of secondary suture. In the case of a young man, in whom the median nerve and the tendon of the flexor carpi radialis

muscle had been divided by a wound received some months previously, with paralysis and trophic changes, the ends of the nerve were freshened and brought together with catgut; the divided tendon was also united. The hand was dressed in the position of extreme flexion. The wound healed without complication and the function of the part was restored. An interesting point was that the restoration of function began at a period earlier than at which we could ordinarily expect to have regenerative changes take place. It is possible in cases in which secondary suture has been attended by such a favorable result, that the preceding degenerative changes, which take place principally in the proximal ends of the nerve, have gone on until they are already so far advanced that the subsequent regenerative changes commence so soon as the restoration of continuity is established. Whatever the explanation, it is a fact that the function of nerves is sometimes restored at a very early period.

In cases in which, on account of loss of tissue or retraction, it is not possible to bring the ends of the nerve together, various other means have suggested themselves. One is to unite the distal end of the divided nerve to another nerve. Another plan is to split the cut ends of the nerve in such a manner that they may be spliced by turning down a section from the proximal portion and uniting it with a section turned up from the distal portion. Still another plan is the introduction of a graft of nerve from an amputated limb or from a lower animal. One other ingenious plan is to introduce a decalcified bone tube between the ends of the nerve; it has been found that by doing this, the nerve tissue may be prolonged in the calibre of the tube. An analogy to this can be found in sponge-grafting. As is well known, by introducing properly prepared sponge, a wound can be induced to fill up by granulation more rapidly than otherwise. The influence appears to be mechanical, a skeleton being furnished on which the granulations can spread. This operation might be resorted to in any case in which nerve-grafting was required, but in which a natural graft was not available.

Dr. Ashhurst then spoke of cases in which operations had been performed for the removal of tumors from nerves. Two cases of the so-called "painful subcutaneous tubercle," believed by the majority of writers to be a true neuroma, were entirely cured by operation. The large majority of cases of neuroma in stumps are fortunately not painful, but when they are, and the pain can be localized in a single nerve, excision may be resorted to. He had recently had occasion to remove a large neuroma of the kind called "false neuroma," from the popliteal nerve. The tumor was as large as a hen's egg and situated between the branches of the nerve in such a way that it was a matter of some difficulty to remove it without partial division of the nerve itself. The patient made a complete recovery. One point of interest as regards these tumors is as to the diagnosis. They can be moved readily from side to side, but not longitudinally.

Dr. Ashhurst reported eight cases of nerve-stretching, or as the French call it, elongation of nerves. In three cases the musculo-spiral nerve was stretched, having been exposed just above the bend of the elbow. The first case was that of a middle-aged woman with traumatic neuralgia. The operation gave entire relief, but only for a time. Afterward, the pain recurring, neurectomy was performed at her own request. She was permanently relieved of pain, although, of course, paralysis of the parts supplied by the radial nerve resulted. The second case was one of tetanus in which the musculo-spiral and median nerves were stretched, but without benefit. The third case was one of traumatic paralysis. In a case in which the median nerve was stretched for traumatic neuralgia the operation was successful. After stretching nerves, the parts around the wound are for a few days extremely tender. Such was the case in this instance, but the neuralgic pain did not recur so long as the patient was under observation.

Upon two occasions Dr. Ashhurst had stretched the nerves of the brachial plexus. In a case of so-called "concussion" of the brachial plexus in a sailor, there was not only brachial paralysis but also intense neuralgia of the upper extremity. The plexus was exposed in the axilla, and the six principal nerves were stretched. The patient was much relieved by the operation. There was certainly less pain. In another case, in a young man of rather deficient mental powers, there was a history of intense neuralgia of the arm, resisting all medical treatment, and said to have followed a twist of the arm some years before. The patient experienced great relief from the operation and considered himself almost entirely well. In two cases, Dr. Ashhurst had stretched the sciatic nerve for sciatica. One was in a neuralgic female, and although the pain was relieved on the affected side it recurred in the course of the nerve upon the opposite side. This bears out the observation of other surgeons that in cases of idiopathic neuralgia there is not so much to be hoped from the operation of nerve-stretching as in traumatic cases. In a second case, the patient considered himself much benefited by the operation.

It is interesting to observe the profound shock to which stretching of large nerves gives rise. In cases in which, for instance, the sciatic nerve is stretched, the patient suffers from shock to a degree out of all proportion to the severity of the proceeding. This tends to confirm the view that the influence of nerve-stretching is not only local, by breaking up interstitial adhesions, but that it also operates upon the central nervous system, and in some cases is reflected to the corresponding nerve of the opposite side. In the operation of stretching or elongation of nerves, the amount of force to be applied should be sufficient to lift the limb from the bed. The nerve is first drawn upward, then downward; then the whole limb is, for a few seconds, lifted and suspended by the nerve. Such an amount of force is safe in dealing with such nerves as the radial, the ulnar, the median, or the sciatic, but would not, of course, be safe in dealing with very slender nerves. After the operation, the nerve should be restored to its place, and primary union of the wound encouraged.

Neurotomy, or simple section of a nerve, is not often employed at present, since its effect is only temporary, the ends of the cut nerve usually reuniting at an early period. Neurectomy, on the other hand, in suitable cases, may be properly resorted to with considerable freedom. In one case referred to, in which elongation had failed, a portion of the musculo-spiral nerve was excised; a permanent cure was obtained. In four cases Dr. Ashhurst had resected

portions of the inferior dental nerve for neuralgia; in three of these the results were perfectly satisfactory. In one instance only temporary relief was afforded; in this case it was noticed at the operation that the nerve was enlarged and apparently inflamed. The patient returned a year afterward, when the lower jaw was found to be the seat of an extensive epithelioma, a sufficient explanation of the origin of the neuralgia. This case is interesting as illustrating the fact that malignant disease may give rise to rational symptoms before the physical signs of its presence can be detected. At the time of the operation there was no reason to think that the patient had a malignant growth.

In a case of painful convulsive spasm of the trapezius muscle in a middle-aged woman, Dr. Ashhurst resected the spinal accessory nerve. The operation effected a temporary cure. After a time the spasm returned, but was not so painful as prior to the operation. This is the usual history of such cases. The operation is, however, justifiable, though the result be but temporary.

Resection of the superior maxillary nerve has been performed in a number of cases, and in some with good results. Dr. Conner some years ago collected thirteen cases, in seven of which the pain recurred after a shorter or longer interval, while two of the others had not been under observation more than one year. Dr. Dennis has more recently collected a larger series of cases, in which more or less benefit resulted in sixteen out of twenty-one. The operation is a proper one in suitable cases. It consists in shaving off the nerve beyond the ganglion of Meckel. The suggestion has been made that the Gasserian ganglion should be removed. This has been done by Mr. Rose by removing the upper jaw and trephining over the foramen ovale. In this case destruction of the eye followed, and enucleation became necessary. The patient recovered from the operation, and at the end of six months was still free from pain. In the discussion which followed the reading of Mr. Rose's paper, the suggestion was made that possibly all the good attained might have been accomplished by excision of the upper jaw without opening the skull. So many branches of the nerve would have been severed in this operation that it is probable that relief, at least for a time, would have been given. Such an operation would be analogous to that suggested by the late Dr. S. D. Gross, who found that neuralgia of the alveolus in edentulous persons was relieved by removal of the alveolus itself. Dr. Ashhurst had himself employed this procedure in two cases with satisfactory results. The operation consists in simply laying open the soft parts, and with gouge-forceps cutting away the alveolus. Somewhat analogous, too, are those cases of neuralgia of the metatarso-phalangeal articulation relieved by excision of the joint, which Dr. Morton has reported. In the same way it is conceivable that, ingenious as was the operation of Mr. Rose, the same result might possibly have been secured by removing the upper jaw.

Dr. Abbe has extended the ordinary operation of neurotomy for cervical neuralgia, in one case, by removing the vertebral laminæ and cutting the roots of the nerves. The wound healed, but the patient was not relieved of the pain. Another operation consists in freeing the nerves from external pressure. It is now a good many years since Ollier relieved a patient by removing a mass of callus which pressed upon a nerve. This operation has been repeated a number of times. Sometimes the pressure was due to a cicatrix and sometimes to bone. In the case of a child on whom osteotomy had been performed by another surgeon for bow-legs, it was noticed sometime after the operation, when the parts were entirely healed, that the toes of the right foot were drawn down, apparently from paralysis of the extensors. Subsequently an ulcer had formed on the end of the great toe. The flexor tendon of the toe had then been divided and a splint applied. Afterward the patient dragged the foot when he walked; very slight pressure caused sloughing. Three months subsequently, when the patient came under the care of Dr. Ashhurst, the great toe of the right foot could not be raised, and blisters were constantly forming on the toe and heel; the tibialis anticus did not respond to electrical stimulation. It was suspected that the anterior tibial nerve might have been divided in the original osteotomy, but this did not seem likely, because the symptoms had not developed until two months after the operation. Exploration showed that an exuberant mass of callus had formed, pressing upon and binding down the anterior tibial nerve. On cutting down and freeing the nerve, it was found that in the open wound the muscles responded to galvanism. The incision was closed, and soon afterward a fair response to the galvanic current was noted. The patient progressed to recovery without any further trouble, the paralysis gradually disappeared, and the trophic changes were entirely removed.

In the case of a man in whom fracture of both bones of the left leg had been followed by marked bowing outward, there was great pain at the seat of the fracture, and in the ankle, referred to a spot one and one-half inches external to the spine of the tibia. Cutting down upon the tibia, an enormous mass of callus was found, and cut away with great difficulty. The nerve was pressed upon and displaced by this mass. The patient is still under treatment, but has had no pain since the operation; there is every reason to hope that he will recover with a useful limb. These cases are particularly interesting, because in them good can be accomplished without concomitant evil. In neurectomy there is always a risk that the operation will impair the utility of the part, even if it gets rid of the pain.

DR. THOMAS G. MORTON reported a case of

FRACTURE OF THE PATELLA, IN WHICH THE FRAGMENTS WERE APPROXIMATED BY CATGUT; RECOVERY WITH OSSEOUS UNION AND UNIMPAIRED FLEXION AND EXTENSION.

H. F. D., thirty-two years old, fractured the patella by falling from a car, striking the flexed knee upon the ground. There was considerable pain and intra-articular effusion. The limb was placed upon a straight posterior splint and cooling lotions were applied. Five days later a vertical incision six inches in length was made in the median line directly over the patella, exposing the fracture, which was found to be nearly transverse; between the broken surfaces were shreds of the torn extensor tendon, which would have formed an effectual barrier to the apposition of the fragments by any external apparatus. After being drilled in three places, the fragments

were closely approximated and secured by large catgut tied over the upper surface of the patella. A gut drain was inserted and brought out at the upper end of the wound, which was closed by interrupted gut sutures. The limb was again placed upon the straight splint and elevated. The subsequent history was uneventful: there was not an untoward symptom. The dressings were changed four times—first on the seventh day, when the wound was found entirely closed; on the forty-seventh day the patient walked out of the hospital, the limb being protected by a posterior splint. At this time, four years after the accident, there is perfect bony union; flexion and extension are absolutely normal; the patient does not experience any difference in the usefulness of the two knee-joints.

DR. THOMAS G. MORTON also reported a

PECULIAR AND PAINFUL AFFECTION OF THE FOURTH METATARSO-PHALANGEAL ARTICULATION.

The patient, M. M., was twenty-two years old; at the age of fourteen he first experienced pain in the right foot; after some time the left became similarly involved. From that time to the present there have been daily paroxysmal attacks of pain. The suffering has at times been almost unbearable; it generally seemed to be produced by wearing shoes; the pain was confined to the joints of the fourth metatarso-phalangeal articulation of both feet. Removal of the affected joint of both feet was followed by complete relief.

This peculiar and painful affection of the fourth metatarso-phalangeal articulation is not uncommon, but has not received the recognition it deserves. Periodical pain is the only symptom; the suffering is very often almost intolerable. The affection is strictly local, and may be mild or severe. It commonly follows a sprain or twist of the foot or results from pressure of the shoes; it often appears without apparent cause; sometimes both feet are involved.

The occurrence of neuralgia may be understood by a reference to the anatomy of the parts. The metatarso-phalangeal joints of the first, second and third toes are almost on a direct line with each other, while the head of the fourth metatarsal is from one-eighth to one-fourth of an inch behind the head of the third, and the head of the fifth is from three-eighths to one-half an inch behind the head of the fourth; the joint of the third, therefore, is slightly in advance of the joint of the fourth, and the joint of the fifth is considerably behind the joint of the fourth. The fifth metatarsal joint is so far posterior to the fourth that the base of the first phalanx of the little toe is brought on a line with the head and neck of the fourth metatarsal, the head of the fifth metatarsal being in apposition with the neck of the fourth. Lateral pressure brings the head of the fifth metatarsal and the phalanx of the little toe into direct contact with the head and neck of the fourth metatarsal, and the extremity of the fifth metatarsal rolls above and under the fourth metatarsal.

The mechanism of the affection becomes apparent if we consider the nerve-supply of the parts. The branches of the external plantar nerve are distributed to the little toe and to the outer side of the fourth; deeply lodged between these toes are numerous branches of the same nerve, which may be unduly compressed or pinched by a sudden twist of the foot.

Great comfort, often entire relief, is afforded by the use of a soft, narrow flannel bandage, which should firmly cover the anterior portion of the foot, so as to give steadiness to all the toes and which should be tight enough to prevent any rolling or movement of the joints. A suitable broad-soled shoe, laced in front, should be worn. In many cases, however, no treatment except excision of the irritable part will be of any service, and the excision of the joint of the toe, which is readily performed and quickly recovered from, will insure a complete and permanently good result.

DR. CHARLES W. DULLES reported a case of

RARE LUXATION AT THE ELBOW.

G. C., a slight woman, twenty-two years old, fell to the floor by the tipping over of the loose seat of a chair on which she was sitting, injuring the left elbow. Assisted to her bed, it was found that there was a luxation at the elbow. Ether being administered, a dislocation of the radius forward, upward and inward, and of the ulna backward, upward and outward was made out, as manifested by the following signs: the outline of the olecranon was apparent and the process could be felt projecting backward and outward on the radial side of the humerus above the outer condyle; the head of the radius was felt, and its outline was distinctly seen resting against the humerus on its ulnar side above and in front of the internal condyle. The width of the injured elbow was increased to about double that of the sound one, and the arm was semi-flexed, with the forearm so over-pronated that the surface of the dorsum was turned toward the chest. It is well known that the forearm is strongly pronated in simple dislocation of the ulna backward and of the radius forward, which itself is a rare luxation; but in the case reported the forearm was actually twisted on its long axis, and the radius could be felt resting against the humerus above the internal condyle, on its ulnar side. The arm below the elbow was numb, and the patient suffered great pain at and above the elbow, as far as the head of the humerus.

Reduction was effected by placing the patient in the recumbent posture. Standing on her right side, the upper arm was so grasped that the humerus was firmly held near the elbow, and the forearm was flexed and rotated strongly outward until the head of the radius was opposite the external condyle; then the forearm was extended, drawn downward, and strongly drawn upon while being flexed again, when the ulna jumped into its proper place with an audible sound. All the motions at the elbow joint—flexion, extension, pronation and supination—were made, and the humerus, as well as the radius and ulna, were examined from end to end for evidences of any as yet undetected injury which might exist; but none was found. An external rectangular splint, padded with fine carded wool, was then applied and fastened to the arm, forearm and hand to the middle of the fingers. A sling completed the dressing.

The patient made an uneventful recovery, and in a few weeks could use the arm quite well. Two months after the date of injury, the condition of the arm was almost perfect, the only variation from the normal exercise of every motion being a very slight impairment of the power of flexion, so that the left wrist could not be brought as near the shoulder as the right, about half an

inch. This slight imperfection was ultimately overcome.

DR. DULLES also reported a case of

DANGEROUS SPLINTER-WOUND OF THE ORBIT.

A small boy, about ten years of age, had protruding about one-fourth of an inch from the upper right eyelid, the butt of a splinter of wood about one-third of an inch square. A short time before, while playing with some comrades, the boy had run toward a post-and-rail fence, and had squeezed rapidly between two of its rails. Immediately afterward he cried out with pain, and his comrades found that he had run a splinter "into his eye."

On examination it was found that the splinter had apparently passed through the eyelid and the inner and upper part of the eyeball, and was firmly imbedded in the bony wall of the orbit. Its direction was downward, backward and toward the median line.

After gaining the child's confidence, the fixity of the splinter was tested with the fingers and with a pair of dressing forceps. With neither of them was it possible to move the splinter. With a pair of carpenter's pliers, firmly grasping the splinter, the head steadied with the free hand, traction was carefully made upon the splinter in a line with its long axis. Torsion or rotation was avoided, in the hope of bringing away the entire splinter. I had to apply considerable force, and the splinter broke. About an inch and a half came away, leaving an unknown quantity behind.

In conference with Dr. Agnew it was concluded, from a study of the direction of the splinter and the anatomy of the parts, that the splinter might have reached the upper part of the nasal fossa. After etherizing the patient, with a pair of dressing forceps search was made high up in the nose, on a level with the inner canthus. Here a portion of the splinter was felt and grasped, and with some effort a piece of wood about two-thirds of an inch long was dislodged and brought out of the nose. On washing it, it was concluded that it could not be the entering end of the splinter; so the forceps was again introduced, and another piece, which seemed to be imbedded in the septum narium, was worked out in an opposite direction from that used in removing the former piece; on washing it and adding it to the two other pieces, it was thought the entire splinter was secured. The nose was then gently washed with a solution of borax in warm water, and the operation was completed.

The patient was put to bed with the eye lightly bandaged, after an examination which permitted the hope that the splinter had passed over the eyeball without seriously injuring it.

There was no fever and no suppuration. The wound united by first intention, and in a few days the boy was up and apparently perfectly well.

The entire splinter was about two and a half inches long and tapered from one-third of an inch square at the largest part to a point.

DR. J. HENRY C. SIMES read a paper upon

THE REMOVAL OF THE OVARIES AND TUBES,

and reported two cases. Both presented analogous symptoms demanding operation, which was, however, followed by dissimilar symptoms.

Mrs. X., twenty-seven years old. The family history was good. She had had no serious sickness; menstruation began at thirteen years of age; she was always regular and did not suffer more than usual, never going to bed. She was married at twenty-one years of age, but had had no children and no miscarriages. Her health remained remarkably good until three years ago, when she first experienced pelvic pains and tenderness over the region of the left ovary; at the same time there was a very profuse discharge of a "yellowish-greenish matter," which has continued more or less since. Shortly after the attack of pelvic pains she began to have difficulty at her menstrual periods; there was considerable pain, and the flow of blood was much increased. The latter gradually increased to such an extent that she was compelled to remain in bed a week or ten days at each menstrual period. She became much reduced in health, unable to leave her bed, and was steadily losing ground; the profuse hæmorrhage, which occurred at each menstrual period, was fast exhausting her, and she was willing to submit to any treatment which offered a chance of relief. In consideration of the previous history and treatment, there only remained the removal of the ovaries. The ovaries with their tubes were removed, some difficulty being experienced in the separation of the organs on account of dense adhesions to the pelvic fascia. The tubes were enlarged about three times their normal size; the ovaries, to the naked eye, presented nothing pathological. The uterus was very firmly bound down by adhesions. Owing to the hæmorrhage, due to the tearing of the numerous adhesions, it was thought best to insert a glass drainage-tube.

The second case was that of K. Y., twenty years old, unmarried. There had been previous good health, until two or three years ago, when there occurred an attack of pelvic pain, accompanied with vaginal discharge. Subsequently, there was painful and profuse menstruation, which continued to increase in spite of medical treatment, until the patient became exhausted. The ovaries and tubes were removed. The adhesions were less extensive than in the first case, and there was not the same difficulty experienced in the removal of the organs. The bleeding not being so great, it was not thought necessary to employ a drainage-tube. The removed ovaries presented nothing abnormal macroscopically; the tubes were increased to about three times their normal size.

In the subsequent history of these two cases it is to be noted that, although the symptoms were in both quite analogous, and the operation presented local conditions apparently similar in both, yet the course of the cases and the symptoms which developed during convalescence were very dissimilar.

In the second case reported, nothing unusual occurred —in fact, the patient made a rapid and satisfactory recovery, not only from the operation, but also from the symptoms for which the operation was performed. More than two years later she was in excellent health. Menstruation had not returned.

In the first case the drainage-tube was removed on the third day after the operation; the wound healed kindly; however, on the fourth day after the operation the patient appeared somewhat excited and evinced a desire to talk; although quite rational, her conversation was a

little rambling. This was thought to be due to the excitement attendent upon an operation done in the general ward of a hospital, and the patient was removed to a private room. Her nervous state, however, did not improve; the following day decided delirium developed. She remained in the hospital six weeks, and during that time there was no abatement in the symptoms. The insanity continued and there was some deterioration of the physical condition. The patient was now taken to an insane asylum. After two months' detention she returned home with her mental faculties completely restored, although still feeling the effects of the severe nervous shock she had experienced. Menstruation returned for the first time, quite profusely, four months after the operation; three months later there was another hæmorrhage, also quite large; and again two months later there was a slight hæmorrhage; since then there has been no more bleeding. Occasionally, a sharp uterine pain is felt; otherwise there are no local symptoms. The physical condition of the patient is good and she is gaining flesh. She states, however, that her mental condition is not what it was prior to the operation; she is not able to think as she formerly did, at times becoming very much confused; there is a great tendency to sleep; she has lost her ambition for work, and is inclined to melancholia, with much depression of spirits; reading soon tires her and she has no taste for amusement.

In comparing these two cases, symptomatically and pathologically identical, the question that naturally arises is this: Why should one case progress to recovery without a single unfavorable symptom and the other develop a most serious complication? It is reasonable to inquire: Is it possible to form a prognosis, when such analogous cases pursue such opposite courses?

In answer to the first question, it is difficult to give any reasonable explanation, except to say it was due to a peculiarity of the patient herself, a so-called idiosyncrasy, which is a confession of ignorance. The slight excess of hæmorrhage in the one case may have been a possible cause for the complication. While admitting this as a possible cause, the excess was so slight it is scarcely probable.

CORRESPONDENCE.

THE OBSTETRIC CLINIC OF THE UNIVERSITY OF MICHIGAN.

To the Editor of THE MEDICAL NEWS,

SIR: Three years ago the Regents of the University made it possible to establish an obstetrical clinic at this University, and since that time not a student has graduated from the Medical Department without having an opportunity for actual experience at the bed-side of lying-in patients, either under the supervision of myself or of my assistant, Dr. Lynds. Notwithstanding our classes are large and the students of the section make at least two examinations during each labor, there has not been a case of septicæmia during the past three years, and the patients have left the hospital each well satisfied with her treatment. The method adopted in the treatment of these cases is as follows:

The house physician keeps a list of the names and residences of all senior students arranged in sections. So soon as a patient is reported by the nurse to be in labor a messenger is dispatched to the members of the section to which that case belongs. If any student of that section has of late been assisting in post-mortem work or has been with scarlet fever patients, etc., some member of another section takes his place. For final preparation the students thoroughly scrub their nails, hands and arms with brushes, soap and water, and then wash themselves carefully with 1 : 1000 bichloride of mercury solution. They are watched by my staff to see that the examining hand does not become contaminated before the examination is made.

In the meantime the patient is given a douche of sterilized water and carbolic acid, the vulva is washed with bichloride solution and all clothes placed about the patient have been sterilized. When ready for the examinations the patient is placed upon the bed, a drop-curtain shielding her from the view of all except the attending physicians. After the presentation has reached the perineum the parts are sufficiently exposed to demonstrate the delivery. The child is washed and dressed by one of the section, under the supervision of a nurse.

After confinement the patient is given douches of warm, sterilized (thoroughly boiled) water, twice daily. Many of these patients are nursed by the students under the direction of the ward-mistress.

J. NELSON MARTIN.

UNIVERSITY OF MICHIGAN,
ANN ARBOR, June 5, 1891.

NEWS ITEMS.

THE Treasury Department has decided that a statue of the late Samuel D. Gross, which the American Surgical Association proposes to erect at Washington, D. C., may be admitted duty-free.

Parkin Prize of the Royal College of Physicians of Edinburgh.—In accordance with a bequest by the late Dr. John Parkin, the Royal College of Physicians of Edinburgh has offered a prize of one hundred pounds sterling for the best essay upon "The Curative Effects of Carbonic Acid Gas or Other Forms of Carbon in Cholera, the Different Forms of Fever, and Other Diseases." The competition is open to all nations. The essay must be written in English, and be received by the Secretary, G. A. Gibson, M.D., not later than December 31, 1892. Each essay must bear a motto, and be accompanied by a sealed envelope bearing the same motto on the outside and the author's name within. The successful candidate must publish his essay at his own expense, and present a printed copy of it to the College within three months after the adjudication of the prize.

Tulane University.—The wife of Dr. T. G. Richardson has donated $100,000 to the Medical Department of Tulane University, New Orleans, for the erection of a new college building.

Milwaukee.—The Milwaukee Clinical Society has changed its name to that of the Milwaukee Medical Society, and is endeavoring to enlarge the scope and

membership of the Society. It has elected Dr. S. W. French as President. Dr. U. O. B. Wingate as Secretary, and a board of thirteen Councillors, who have the general management. It will hold two meetings per month, on the second and fourth Tuesdays, except the months of July, August and September.

Medico-legal Society of Chicago.—At the annual meeting of the Medico-legal Society of Chicago, held at the Grand Pacific Hotel, June 6th, the following officers were elected for the current year: President, Judge O. H. Horton; Vice-Presidents, Drs. D. R. Brower and James Burry; Treasurer, Dr. Joseph Matteson; Secretary, Dr. Archibald Church.

Delaware State Medical Society.—At the one hundred and second annual session of the Delaware State Medical Society, held at Georgetown, June 9, 1891, Dr. Joseph H. Chandler was elected President; Dr. Ezekiel W. Cooper, Vice-President; Dr. William C. Pierce, Secretary; Dr. Oliver D. Robinson, Treasurer. Delegates were elected to the American Medical Association and to the Medical Society of the State of Pennsylvania. Dr. E. E. Montgomery and Dr. Mary Fisher, both of Philadelphia, read papers and were elected honorary members of the Society. The next meeting will be held at Dover.

Illinois State Board of Health and Medical Education.—The Secretary of the Illinois State Board of Health has issued the following circular to the principal teachers and to the educational institutions of the country:

DEAR SIR: There is a demand from medical teachers and young men who intend to study medicine for a literary course preparatory to the study of medicine. This demand has been met by a few of the literary institutions in the United States, and it is hoped and believed that it will be much more generally met during the next two years. The following institutions now offer science courses for students who intend to study medicine, or who intend to teach or otherwise engage in biological work: 1, University of Wisconsin; 2, University of Pennsylvania; 3, Johns Hopkins University; 4, University of Nôtre Dame; 5, Yale University; 6, Cornell University; 7, Princeton University; 8, Lake Forest University; 9, Northwestern University; 10, West Virginia University; 11, University of Kansas.

As must be obvious, such a course should be based on biology, and should include thorough work in this science, as well as in osteology, comparative anatomy and chemistry, with English, French, German, some Latin, clay-modelling, free-hand drawing, mineralogy, mathematics, thorough trigonometry, mechanics, logic, general and pharmaceutical botany, and (in the last year) psychology. It is, of course, understood that botany, being a branch of biology, should have a prominent place in the course.

The catalogues of the universities mentioned contain the lists of studies offered in their science courses.

Such a course should extend over four years. This will involve no loss or waste of time to the student. The Illinois State Board of Health now requires that students of medicine matriculating in the autumn of 1891 or thereafter must study medicine four years and must attend three courses of lectures—no two in the same twelvemonth—in order to obtain a license to practise in Illinois. This rule will apply also in some other States. The Illinois State Board will, however, recognize a thorough course in science, such as indicated above, as equivalent to two years' study and one course of lectures, thus enabling the student to enter the second class in the medical college. This makes the full time of study in the literary and medical schools six years, or two years less than is required of the student pursuing a strictly classical course. Not only will time thus be saved, but the science student will be much better prepared to enter the second course of the medical school than will the classical student to enter the first year.

The Illinois State Board wishes to make up a science course that can be recommended to any college wishing to adopt such a course, and having but little time to study the subject, I desire to enlist your aid and have your advice in the matter, so as to make the course as practical and as beneficial as possible. Will your Faculty, therefore, make out such a course as it thinks best for the purpose, and send it to the Secretary of the Board.

The demand from medical teachers and from students of medicine, having been met by some universities, must be met by all who would continue to hold a high rank as educators of young men for the work of life.

Respectfully, JOHN H. RAUCH, M.D., Secretary.

Frederick P. Henry, A.M., M.D.—The many friends of Dr. Henry will be gratified to learn that at the last commencement of Princeton College the honorary degree of Master of Arts was conferred upon him. The selection is excellent and the honor well merited.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JUNE 13, 1891.

ALFRED, A. R., *Assistant Surgeon.*—Detached from Naval. Hospital, Norfolk, and ordered to the "Fern."

STOUGHTON, JAMES, *Assistant Surgeon.*—Ordered to duty at Naval Hospital, Norfolk, Va.

YOUNG, L. L. S., *Assistant Surgeon.*—Ordered to duty at Naval Station, Port Royal, S. C.

HOCHLING, A. A., *Medical Inspector.*—Ordered as a member of Naval Medical Examining Board.

STREET, T. H., *Surgeon.*—Ordered to duty on the U. S. S. "Bennington."

WALES, P. S., *Medical Director.*—Ordered as delegate to represent the Medical Corps of the Navy, to the International Congress of Hygiene and Demography at London, Eng.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will upon publication be liberally paid for, or 250 reprints will be furnished instead of payment, provided that the request for reprints be noted by the author at the top of the manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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THE MEDICAL NEWS.

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ORIGINAL ARTICLES.

A STUDY OF THE SNOOK-HERR POISONING CASE.[1]

BY GILES S. MITCHELL, M.D.,

PROFESSOR OF OBSTETRICS IN THE CINCINNATI COLLEGE OF MEDICINE AND SURGERY; PROFESSOR OF GYNECOLOGY IN THE WOMAN'S MEDICAL COLLEGE OF CINCINNATI;

AND

JAMES G. HYNDMAN, M.D.,

PROFESSOR OF MEDICAL CHEMISTRY AND CLINICAL LARYNGOLOGY IN THE MEDICAL COLLEGE OF OHIO.

A WEDDING dinner was recently partaken of by sixty or seventy guests at the country-house of the bride's parents, near Louisville, Ky. Within a few hours the great majority of the guests were taken ill, all presenting the symptoms of gastro-intestinal inflammation. Within a few days several died. The lives of others were prolonged for from ten to fifteen days. Six cases finally terminated fatally. The symptoms in all the cases were essentially identical, differing only in intensity. Such an occurrence would under any circumstances have attracted much professional and popular attention, but in this instance it was probably increased by the social prominence of the victims and the number of people affected. Shortly after the repast, the newly-married couple left for the North. When their train reached Cincinnati, three hours later, both were feeling ill; they concluded to remain at a hotel over night, and continue their journey the following day.

Dr. Mitchell was called to see Mr. Snook at 10 o'clock on the evening of April 15, 1891. The patient was partly undressed and reclining on a lounge. He stated that he and his wife had arrived that evening from Louisville via the Shortline Railroad, and that the motion of the train had made him ill. He complained of nausea, abdominal pain, intense thirst and a constriction of the throat. He had vomited several times while on the train, and had had one stool. Upon inquiry as to what he had eaten, he said that he and his wife had attended a reception just prior to starting, and that he had partaken freely of chicken-salad, ice-cream and cake. His wife had eaten but little, and was only slightly nauseated. While giving this recital he vomited quite freely, the vomited matter consisting mainly of water, mucus and bile. The case was regarded as one of ordinary gastro-intestinal irritation, due to the character of the food eaten, and aggravated by the motion of the train, upon which latter point the patient laid particular stress. Although the pain was quite severe, it was deemed best to assist nature in washing out the stomach and unloading the bowel. The patient was given warm water in large quantities to drink, which was immediately vomited; after which one-tenth grain calomel powders were ordered to be taken one every hour, and mustard to be applied over the stomach. Dr. Mitchell then left, promising to return on the following morning. He was again summoned, however, at 2 A.M., and learned that the patient had continued to vomit. He had had three stools, and the pain in the stomach and bowels had become so severe as to be unbearable. A hypodermatic injection of one-third of a grain of morphine was administered. At the expiration of one-half hour the patient had become easy. At 7 A.M. on the following day Dr. Mitchell was informed that the patient had slept some, but he still complained of pain, vomiting and diarrhœa. The pulse was 100, and the axillary temperature 102° F. These symptoms continued throughout the day. Milk and lime-water were ordered; also a siphon of seltzer. These were mostly rejected, while the thirst increased. The calomel was discontinued, and a mixture of bismuth and paregoric was given. In the evening the temperature of the patient was found to be one degree lower. At the morning visit, on this second day, Mrs. S. presented the same symptoms as her husband, but not in so intense a degree. Her temperature, however, was the same as his. During the day Dr. Mitchell became convinced that his patients were not suffering from an ordinary attack of biliousness, and suspicion was aroused that some irritant poison had been ingested. Careful inquiry of the patients failed to furnish any light upon this point, both firmly believing that the motion of the train had produced their illness.

On the morning of the 17th, Mrs. S. had slightly improved, but her husband was worse in every way, save that his temperature had fallen almost to the normal. It continued to fall until late in the evening, when it was found to be subnormal. Dr. Hyndman was now asked to see the case in consultation, and from this time forward he and Dr. Mitchell continued in joint attendance. Mr. Snook was then in a condition of profound collapse. He was cyanotic, his heart's action very rapid and weak,

[1] Read before the Cincinnati Academy of Medicine, June 1, 1891.

the skin bathed in a profuse cold perspiration, and the axillary temperature 96°. Strophanthus was now administered per os. This was selected instead of digitalis on account of the continued irritability of the stomach. Morphine (one-tenth grain doses) combined with atropine was given hypodermatically. Warm applications to the body, in the form of frequent mustard baths, were employed.

During the fourth and fifth days there was improvement, the stools becoming less frequent, but the nausea continuing. At this time we learned of numerous similar cases having occurred in and about Louisville, all traceable to the same wedding dinner. It was ordered that the urine and vomited matters be preserved for us, but, by some oversight, we did not obtain any for examination until the sixth day of the patient's illness. On this day, and upon several subsequent occasions, the urine, vomited matter and mucous excretions from the bowel were carefully examined by Reinsch's method, but the bright copper strip showed no signs of the characteristic deposit of arsenic.

Beginning on the third and fourth days respectively both cases exhibited a decided eczematous eruption over the arms, shoulders, face and upper portions of the chest. In the case of the lady this continued during her entire convalescence, which began about the sixth or seventh day. In the case of Mr. S. the eruption had more of a papular appearance. Under strophanthus, whiskey and a bland diet for the next few days he appeared to improve. His heart's action became stronger, his temperature remained about 100°, and his abdominal tenderness diminished. Diarrhœa and vomiting were almost checked. But the thirst, restlessness, and mental hebetude were quite pronounced. Morphine in small doses was continued. There was also decided subsultus tendinum. His urine, heretofore passed in normal quantity, was found diminished, and had to be withdrawn by the catheter. On the ninth day of his illness but four ounces were secreted. We now resorted to the hot vapor-bath, reinforced by the hypodermatic injection of one sixth of a grain of pilocarpine. The profuse perspiration which followed was accompanied by a marked amelioration of his mental condition. Three injections of pilocarpine were made at intervals of eight hours. At the end of this time the kidneys appeared to have resumed their function and secreted almost the normal quantity; but catheterization was required from this time on.

While Mr. Snook could at all times be aroused without much difficulty, his mind seemed sluggish. About the tenth day epistaxis set in. Though not profuse it reappeared daily for several days. On the twelfth day, having for three days had no stool, he was given a saline cathartic in divided doses. The resulting passages each contained a small amount of bright-red blood, evidently from the lower bowel. From this time on the bleeding continued. Its amount was small, but it was constant, and the patient, though able to answer questions intelligently, did not seem to realize that hæmorrhage was going on. His restlessness continued, interrupted only by very brief naps, and, notwithstanding stimulants, his heart's action grew more and more feeble, occasionally intermitting. These intermissions grew more frequent and the contractions weaker, until the evening of April 30th, the sixteenth day of his illness, when he died.

During the week preceding death Dr. Long, of the Marine-Hospital Service, and on the last day, Dr. P. S. Conner, saw the case in consultation with us. The coroner was at once notified of the death; upon his arrival he decided to order a post-mortem examination and a chemical analysis of the tissues. The following is the pathologists' report to Coroner Bange:

"In accordance with your instructions we have this day, May 1, 1891, made a post-mortem examination of the body of W. B. Snook. The body was that of a well-developed, well-nourished, white, adult male, of the apparent age of about thirty-five years, about 5 feet 6 inches in height, and about 160 pounds in weight. Post-mortem rigidity and post-mortem staining were well marked. On the right arm and left leg were found numerous small elevations of the skin, resembling wheals. On section the subcutaneous fat was found in good quantity. *Pleuræ:* In the right pleura about one ounce of fluid blood was found, with some extravasations of blood under the pleura. The *lungs* were normal, with the exception of slight hypostatic congestion. *Heart:* An extravasation of blood, about the size of a split pea, under the endocardium of the left ventricle, was found. The *stomach* contained about three ounces of reddish, grumous fluid. The mucous membrane was marked by hyperæmia, and there was marked extravasation of blood in its substance. *Intestine:* The small intestine in its mucous and submucous coat contained extravasated blood; the mucosa was very hyperæmic, and the solitary follicles and the patches of Peyer were swollen. The large intestine was also hyperæmic, with swelling of the solitary follicles. The *liver* was somewhat fatty. The *spleen* was slightly larger than normal, firm and hyperæmic. The *kidneys* were fatty, with small extravasations of blood under the capsule and under the lining of the pelves. *Bladder:* Marked extravasation of blood under the epithelium and in the mucosa. The *brain and meninges* were normal.

"In our opinion the cause of death was, in all probability, the ingestion of some irritant poison.

"FREDERICK KEBLER.
"E. W. WALKER."

On May 8, 1891, the following report was submitted to the coroner by Dr. Dickore, the analytical chemist:

"On Friday, May 1st, you sent me for poison-analysis the following parts of the body of the deceased Mr. Snook: 1. The stomach and its contents, in separate glass vessels. 2. The liver, spleen, heart, kidneys, intestines, a piece of rib, etc., in another glass jar; all of which I have carefully examined and analyzed for metallic poisons.

"In the spleen, the liver, the intestines, and the other parts from jar No. 2, separately examined, I have found traces of copper-combinations in sufficient quantity to be separated and to answer all chemical tests for this metal. None of this was found in the stomach.

"The analysis for arsenic by Marsh's method resulted, in the case of the liver, spleen, intestines and stomach, in producing a few little spots on white porcelain, resembling those which arsenic gives by this method; but the spots were not larger than pin-points—only two of the size of small pin-heads—and it was impossible to produce the nitrate-of-silver reaction with them; and as this is the only absolute and true test for this poison, I cannot conscientiously call these little spots a positive proof of the presence of arsenic.

"If any larger quantity of poison had been introduced into the system of the deceased, it must have been eliminated during the sixteen days of his illness by physiological processes and careful medical treatment. Very respectfully, W. DICKORE."

Thus far we have given a full account of the two cases falling under our observation. The greatest interest necessarily attaches to the diagnosis of the cause of these symptoms. The diagnosis, reached by the process of exclusion during the life of the deceased, and expressed by us, was that we were dealing with cases of arsenical poisoning. At the present time, with the additional information before us, derived from post-mortem and chemical examinations, we feel even more confidently than before that our original diagnosis was correct.

A number of explanations offered themselves. Among them were the possibility of the existence of some acute infectious disease, such as trichinosis or typhoid fever, of mushroom-poisoning, or poisoning by tyrotoxicon or other ptomaine, or by irritant minerals, such as arsenic.

The early onset and the great severity of the symptoms, together with the proof that no form of pork was used at the meal, exclude from consideration the possibility of trichinosis. Though the post-mortem lesions, so far as the intestinal tract is concerned, somewhat resemble those of typhoid fever, the almost simultaneous attack of so many persons leads us very quickly to abandon the supposition of typhoid fever, even though we have before us some resemblance to the hepatic, renal and intestinal changes occasionally following the action of the typhoid bacillus, and the resultant chemical changes due to the ptomaines.

The possibility of tyrotoxicon-poisoning naturally suggested itself. Our patients presented the nausea, epigastric pains, vomiting, and purging characteristic of the action of this ptomaine. Their pupils, however, were never dilated, and, instead of subnormal temperature, they presented fever. The lesions found post-mortem also contra-indicate tyrotoxicon-poisoning; according to Vaughan, this ptomaine produces the symptoms without the lesions of gastro-intestinal irritation. Subsequent investigation showed that those wedding guests escaped who partook only of ice-cream and coffee with cream.

Mushrooms cannot be charged with the production of the symptoms, because some of the most severe cases were those of persons who had not eaten any mushrooms.

One of the latest of the many local theories of explanation is based upon the report that, at the time of the wedding, the chickens and turkeys at the bride's home were affected with chicken-cholera, and that some fowls showing evidence of being affected with this disease were used in the preparation of the salad. The report states that parts of these chickens, which were black, were cut off and the remainder utilized. It is difficult under the circumstances to conceive of the possibility of such an occurrence. We are informed by very competent authority that, in this vicinity, chicken-cholera is almost unknown so early as April; but aware, as we are, of the rapidity with which such pathogenic germs may multiply and cause general barnyard infection, we do not care to insist upon this objection. Persons living on a farm and familiar with chicken-cholera would be the first to recognize danger from this source. The further elaboration of the chicken-cholera theory is by no means convincing. We are told that the chicken-salad left over from the wedding was examined (eight or ten days later), and that ptomaines were found. As these investigations were not begun until after the death of several of the persons poisoned, and as the material examined consisted of such remnants of the wedding dinner as were still collectable at the end of a week of warm weather, it is not at all surprising that ptomaines should be present. Being chemical compounds, formed during the putrefaction of organic substances, such ptomaines would almost necessarily exist in the refuse food a week old; but, we are told, these ptomaines were identical with those found in the chickens which died of cholera and in the stomach of one of the victims (who died eight days after the wedding). As to this, we can only state that as far as we are acquainted with the literature of ptomaines, we believe that the ptomaine resulting from the action of the chicken-cholera bacillus has never yet been isolated. There is, therefore, good ground for scepticism regarding this discovery. In the light

afforded by the symptoms, the post-mortem lesions, the chemical analyses, the fact, already mentioned, that up to the present time no such anatomical lesions have ever been observed to follow ptomaine-poisoning, and the utter absence of any reliable experimental observations upon these ptomaines (or their precedent bacilli) in man—we feel justified in saying that the application of the ptomaine-theory to this case is not tenable.

Let us now consider the theory of a mineral irritant. The history of our cases has recorded the occurrence of thirst, nausea, retching and vomiting, epigastric and abdominal pain, tenderness on pressure, severe purging, decided fever, small, irregular pulse, labored respiration, suppression of urine, great restlessness, mental hebetude, eczematous eruptions, epistaxis, hæmaturia and intestinal hæmorrhage. Many of these symptoms were manifested by both, and all by the fatal one, of our cases. No poison but that of a mineral irritant could produce such an array of symptoms and such lesions as have been described. These post-mortem conditions, found by two of the most competent pathologists of Cincinnati, led them in their report to the coroner to state that the cause of death was probably "the ingestion of some irritant poison."

Portions of the liver, kidney, spleen, muscle, brain and bone were submitted to Dr. Dickore for chemical analysis. As stated in his report, Dr. Dickore found decided traces of copper, and lesser amounts of some other substance which might possibly have been arsenic, but which was present in too minute a quantity to be absolutely determined.

It is a well-known fact that copper, like antimony, silver and lead, often remains in the organs for many months after it has been taken. Copper may be taken under so many different circumstances and in such diverse ways, and is, in consequence of its slow elimination, so frequently found in the tissues, as to lead some very able toxicologists to claim that it is one of the normal consistents of the body. It is a well-known fact that copper exists in some edible vegetables, being taken up from the soil in which they grow. Then, too, copper salts are often employed to impart a fine, green color to pickles and other preserved fruits. Its frequent presence in the food and its very slow elimination might possibly account for the discovery of copper in the body of our patient. Its presence should never, however, be supposed to indicate copper-poisoning unless we have the symptoms and pathological lesions which are known to follow its administration in large quantities. These were entirely absent in our patients. The characteristic color of the vomited matter, the jaundice, the green line along the gums, were all absent. On the other hand, there were numerous bloody extravasations in the heart, liver, spleen and pleura, which, according to Tardieu, the greatest French authority, are altogether absent in copper-poisoning.

Copper rarely causes fatal poisoning. Such large quantities are required that the styptic taste would call attention to it, and thus, if homicide were intended, defeat the object. Natural verdigris is undoubtedly poisonous; but the supposition is too strained that, on the occasion of a wedding, unclean copper vessels should be employed, or even, if used, that enough verdigris should exist to poison fifty persons, many of them fatally. It is possible that the poisoning may have been produced by arsenite of copper, the symptoms of which are mainly those of the arsenical ingredient. In this case, however, the analyst would as likely have discovered the arsenical as the cupreous ingredient.

Having, as we believe, excluded all poisons other than arsenic, we desire to take up a few points of interest in connection with this as the probable agent. The late appearance of the pronounced symptoms in many of the cases has been by some considered as excluding arsenic from consideration; but it is recognized by all writers on this subject that there are few poisons which present a wider variation in the time of appearance of symptoms than arsenic. As one of the many instances of this fact we may mention the case recorded by Reese, in which, after a teaspoonful of arsenic had been taken by mistake, no symptoms whatever manifested themselves for six hours. It is true that no arsenic was discovered by ourselves in the tests made of the urine, the vomited matter, and the fæces. For this purpose the Reinsch test was employed, but, as stated in the narration of the cases, our tests of these excretions were not made until the sixth day. During this time vomiting and purging had been profuse and had probably eliminated the greater portion of the poison.

The question will naturally arise, If arsenic were the cause of death, why was it not found in definite quantity in the tissues in our fatal case? We reply that it was simply because the patient was kept alive for fifteen days, and the poison was eliminated by the vomiting, the purging and the excretion of kidneys, possibly the skin, this elimination being accelerated by the hot vapor-bath and the pilocarpine injections. It is a well-known fact that the eliminative functions may in the time alluded to entirely free the system of arsenic. In proof of this we need only cite one of many cases, *e. g.*, that of Dr. Alexander (*Medical Times and Gazette*, April 15, 1857), in which "a gentleman swallowed a large dose of arsenious acid, and after suffering the usual symptoms, died on the sixteenth day. Chemical analysis detected no trace of the poison in any organ of the body, although it was abundantly contained in the

food swallowed by the deceased." Casper says: "Arsenic may be eliminated by the excretory organs to that degree that it may entirely and completely disappear on an average of from one to two weeks. According to some experiments on animals, fifteen grains disappeared completely in three days." Taylor states that in many undoubted cases of arsenical poisoning not a trace of the poison can be found in the stomach or the contents. "It is, further, a well-known fact that if an individual, to whom arsenic has been administered with criminal intent, lives for fifteen or sixteen days, no part of the body may present any trace of the poison."

We are firmly convinced that had an analysis of the tissues been made in those cases in which death took place during the first week, arsenic would have been found and the whole matter long ago have been made plain. Instead of this being done, we learn from the Louisville press that in the case of one of the first to die, a man of high social and business standing, no post-mortem was made and no inquest was held. Instead of the pathologist and analytical chemist, an undertaker was summoned, who proceeded at once to embalm the body with an arsenical fluid. Fortunately, all cases were not handled in this peculiar manner. Scientific interest was not altogether thwarted. The one missing link in this chain of evidence is supplied by the results of the examinations made by Mr. Flexner, a most competent chemist of Louisville, who, with the attending physician, found arsenic (by Reinsch's method) in the urine of two of the non-fatal cases. A single positive observation of this character is of greater value than any number of negative and hypothetical statements.

In conclusion, we would say that at least one of our cases was so marked that, had we seen the arsenic administered, we could have looked for no more pronounced symptoms and no more characteristic pathological lesions. These, considered in connection with the analyses just referred to, in cases having the same origin and many of the same symptoms, leave no doubt in our minds that arsenic was the offending substance.

At this distance so many difficulties and conflicting statements are encountered in our search for the particular ingredient containing the poison that for the present we purposely omit discussion of this feature.

ADDENDUM.—Since presenting the foregoing report to the Academy, the Coroner of Louisville has begun an inquest. The testimony of the father of the bride, at whose home the wedding-dinner was given, completely demolished the chicken-cholera theory. Mr. Herr stated that the chickens and turkeys on his place were healthy, and that not a fowl had died there for years. The chickens were prepared and dressed by a colored woman on the place, and the family had been eating of the giblets for three meals. He stated also that there were no copper vessels on his place. The food was cooked in iron vessels.

ICE-CREAM POISONING.

BY GEORGE S. HULL, M.D., PH.G.,
OF CHAMBERSBURG, PA.

WITH the advent of summer comes the increased consumption of our so-called "national luxury," ice-cream; and, *pari passu*, numerous reports of sickness, sometimes even of deaths, caused by this supposed harmless delicacy. That very many cases of illness are not reported, and on account of hasty and imperfect diagnoses that even more are not recognized, cannot be doubted. The profession has failed to give this important matter the attention it demands.

About four years ago the writer published a report of some experiments he was then performing with a view to ascertain the toxic agent in cases of ice-cream poisoning; since that time he has been following up this line of investigation, and now feels that a fuller exposition of his views may prove of use to the profession.

Previous to the time of the discovery of tyrotoxicon by Dr. Vaughan, cases of poisoning by ice-cream which could not be traced to the criminal introduction of foreign substances, such as arsenic, were thought to be due to the milk having been taken from cows which were diseased, or improperly fed and cared for. But the query would arise: If, from such causes, ice-cream be poisonous, why should not milk, which is consumed so much more largely, cause a far greater amount of illness? The same question comes up when we consider Dr. Vaughan's claim that tyrotoxicon is the cause of the trouble. The eminent professor has not only found the ptomaine in ice-cream which has manifested poisonous effects, but has studied the subject thoroughly, even to the painstaking analysis which proved it to be diazobenzol.

Tyrotoxicon is the product of a peculiar kind of fermentation, but the ferment which excretes it is not precisely known, neither are the conditions which are most favorable to its development matters of exact knowledge. When the microörganism which generates this poison is present in milk at a temperature of 98°, we may look for the production of tyrotoxicon, but we may fail to find it because it is quite ephemeral, breaking up, by further fermentation, into other and probably less harmful compounds. Even following Professor Vaughan's directions, one finds it difficult to make tyrotoxicon; he is taxed to get the milk into the precise condition necessary for the generation of the com-

pound, and, since it is so apt to change into other substances, yet more taxed to know when it is ready for extraction. The fermentation which elaborates the ptomaine would, therefore, seem to be but a fortuitous occurrence, in no wise comparable in constancy to the lactic fermentation. One would infer that tyrotoxicon would most likely be present in milk which has been kept in warm places, in unclean cans, and especially in a vitiated atmosphere; and as these conditions very frequently obtain, why do we not hear of numerous cases of milk-poisoning, and but few of poisoning by ice-cream, instead of the *reverse?* Further, a boiling temperature will not only destroy the ferment, but break up its excretion, tyrotoxicon; and a freezing temperature should certainly not be conducive to the growth and activity of cell life. Many ice-cream mixtures are boiled before being frozen, and, thus sterilized, the chances of fermentation are reduced to a minimum.

Without further argument, it seems obvious that the tyrotoxicon theory will explain but a portion of the cases of ice-cream poisoning, and after eliminating those due to it, and the others caused by the vicious introduction of foreign poisons, we have remaining a large, and I believe a very large, number of cases unaccounted for. To these we now direct our attention.

Granted that the ice-cream mixture, whatever be its composition, is free from any poisonous ingredient, and that it has even been sterilized by heat before being put into the freezer; let us inquire whether there be any possibility of its acquiring poisonous properties while undergoing the process of freezing, or during its stay in the freezer. In short, Is the modern ice-cream freezer, after the innocuous mixture is put into it and the power applied, guilty of engendering in its contents any deleterious substance?

The composite freezer of to-day might be described as an iron paddle coated with zinc, resting upon an iron bottom coated with the same metal, and a surrounding tinned-copper or tinned-iron can. Now, should the zinc or copper, by any chance, be dissolved to any extent by the contents of the can, we must expect serious results. This is the point we wish to consider, and in order to be understood by those who may not be acquainted with the methods we shall pursue, it may be well to begin by instituting a simple comparison. If we expose a piece of wood to the air, it will be very slowly burned (oxidized), but if we make the conditions more favorable by first raising it to an incandescent state, it will be rapidly consumed, giving out a poisonous gas (carbon dioxide), and liberating a force which we call heat; now substitute zinc for the wood, and a dilute acid or a solution of common salt for the air, and we find that the zinc will be slowly burned (chemically combined). But if we make the conditions more favorable by placing with it in the liquid a metal (tin will do), less soluble than the zinc, and bring them into direct contact with each other, or connect them by means of a conducting wire, then we at once have a more rapid combustion of the zinc, which enters readily into chemical combination with the liquid—the result being that a poison, zinc chloride, is generated, and also a force analogous to heat, which we collect and call electricity. As the heat cannot be produced except the wood burn, and the more wood consumed the greater the heat, so neither can the electricity be evolved unless the zinc be eaten up by the liquid, and the more metal dissolved the greater the amount of electricity eliminated. From this we at once conclude that if we can get any electricity from the ice-cream freezer while its contents are being frozen, or before or after, then there must be some chemical action going on between the liquid and the zinc (or, in some kinds of freezers, the copper), by which the metal is taken up and held in solution by the ice-cream, rendering it dangerous to consumers in direct proportion to the amount of metallic poison held in solution. But how shall we tell if electricity is being generated? We determine heat by means of a thermometer, electricity by the use of a galvanometer. The principle of the latter instrument is quite simple: If we take a magnetic needle, bend around it, longitudinally, a turn or more of copper wire, and pass a current of electricity through the wire, the needle will swing to the right or left according to the direction the current is travelling, and the deflection will also be proportionate to the strength of the current developed.

Now we are ready for our crucial test: we are to prove that the modern ice-cream freezer is in reality but a form of galvanic cell, the only difference being that in the cell the current is utilized and the poisonous solution of zinc thrown away, while in the freezer, proper allowance being made for the wide difference in the amounts of zinc dissolved in the cell and in the freezer, the current is wasted and the toxic metallic solution is eaten.

Let us institute a closer comparison: If we put in an acid solution a strip of zinc and one of tin, and connect them by a conducting wire which runs through the galvanometer, at once the needle is deflected, which means that the zinc is being consumed by the acid; so, if we take a tinned can and a zinc-coated paddle in the modern freezer, and instead of letting them be in contact at the bottom, as is the case, lift the paddle a trifle and make the contact above by means of a wire—in order, for the purposes of the test, to get the galvanometer in the circuit—we shall find that on putting into the can

even the purest and simplest ice-cream mixture (cream, sugar, and flavor) there is a deviation of the needle in our galvanometer, telling us that a current is passing, and that it comes from the chemical action between the ice-cream and the zinc, or, in other words, that, however slowly, the poisonous metal is dissolving. Briefly, then, this is what occurs: the zinc or positive element is acted upon by the fluid and a current generated, which passes across the cream to the tin or negative element, then up the wire through the galvanometer and back to the zinc, completing the circuit. The longer the zinc is in the freezer the greater will be the amount dissolved, the rapidity of the solution being directly dependent upon the character of the mixture in the can.

Without introducing lengthy tables, let me summarize a large number of experiments by saying that while pure, sweet cream in the modern freezer deflected the needle of the moderately sensitive galvanometer but 7°, the cream, when sour, swung the needle violently to 90° (*i. e.*, to a right angle to the current). Pure milk registered 40°, and when sugar and corn-starch were added, 45°. When eggs were incorporated the needle moved to 80°. None of the formulæ for ice-cream mixtures failed to show *some deflection*, proving that *all* of them were capable of acting in some degree upon the zinc. When any of these mixtures became sour, or when acid fruits were added, the needle turned rapidly to 90°. If by any mischance salt finds its way into the cream, the deflection is greatly increased on account of the zinc being more rapidly dissolved by the active sodium chloride. The resulting zinc chloride renders the ice-cream so much more poisonous.

The modern ice-cream freezer, therefore, has two fatal defects: first, it has two dissimilar metals, one (the positive element) more soluble than the other (the negative); and, secondly, it has these metals in contact—in other words, it is a galvanic cell in closed circuit. It follows that we have only to put into the freezer some ice-cream mixture, as an electrolyte, in order to get a metallic decomposition and solution, which is proved by the current generated. The amount of poisonous metal dissolved depends upon the character of the mixture used.

Now, what is the remedy? We must conclude that it lies in making the freezer of one metal, and that metal the most insoluble that can be had. Did not cost enter into the consideration of the matter, platinum would make the model freezer. Pure tin, or heavily tinned iron, would be acceptable, while glass, if it could be made tough enough without the addition of lead, arsenic, etc., would be still better. If two dissimilar metals must be used, I would not allow them to be in electrical, *i. e.*, immediate contact. I would also freeze the mixture rapidly and remove the more soluble metal immediately when the cream is sufficiently solid. If ice-cream is made of pure ingredients, even in the modern freezer, provided it has been previously well cleaned and that the paddle is removed so soon as the mixture is frozen, the zinc dissolved will hardly be sufficient to produce symptoms of poisoning even in a large consumer, and yet we know that many people with sensitive digestive organs find ice-cream very frequently disagrees with them. But if the cream is prepared, say for a picnic which is to start early the next day, and if the paddle is left in place all night, so as to re-freeze it in the morning should it have softened through the night, and especially if, as is often the case, the mixture is a cheap one, made of milk, eggs, corn-starch, etc., then we have a first-rate galvanic cell, with its zinc and tin, or, in some cases, copper elements.

As we have seen, the chief mixture is the electrolyte, and the electric action of the whole may, perhaps, be heightened by the presence of some salt added by accident or design. The result will be that the current flows all night—itself doing neither harm nor good to the mixture, but the deadly zinc or copper has all this time been dissolving in the ice-cream. In different cases between these extremes we may have many grades or degrees of solutions of zinc or copper, dependent upon the conditions already mentioned.

Were space at our command we might apply the same character of reasoning to canned fruits, vegetables, etc.

We might sum up the results as follows:

1. If we desire the least quantity of metallic poison in our ice-cream, and still keep in use our modern freezer, we should see that the ingredients are pure, that the mixture is frozen quickly, and the paddle at once removed.

2. The amount of poisonous salts is increased by acid mixtures, especially by the addition of eggs, corn-starch, etc. The addition of salt for flavoring purposes, as done by some manufacturers, becomes criminal, and it is grossly careless to allow any of the salt water from the outside to get into the can. If through fermentation ice-cream should contain tyrotoxicon, then the mixture must be acid, and will, on this account, dissolve still more zinc or copper.

3. The amount of dissolved metal depends upon the length of time the paddle is left in the can, or, if the can have a zinc-coated bottom and tin sides, the length of time the cream remains in it; or the amount of electrical action will again vary if the can be copper coated with tin, and the tin be worn off so as to expose the copper, thus producing local currents and dissolving the copper.

But if the danger element is to be entirely removed from our "national luxury" it is more important

that there be used in the construction of the freezer but *one kind of metal*, and one not easily oxidized. No *dissimilar metals should be in contact in any fluid* for human consumption, especially if the fluid be acid, or contain any saline matter.

THE NUTRITIVE VALUE OF BEEF PREPARATIONS.[1]

BY R. H. CHITTENDEN, PH.D.,
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I HAVE been asked to consider this subject mainly from the chemical standpoint and to furnish some information regarding the nutritive value of the various beef preparations which, as concentrated foods, are at the disposal of the physician and the public in general. It certainly is an important matter, one in which we are all interested, for there are many occasions in a physician's practice when it is a question of nutriment rather than of medicine, and we certainly need as definite knowledge of the nutritive properties of the foods we employ as of the medicinal virtues of the drugs of which we may make use.

Let us consider first some of the principles which should guide us in forming an estimate of the nutritive value of a food preparation.

It is a well-understood physiological law that the proteid or albuminous food-stuffs are essential to animal life. They alone contain the peculiar groups of chemical elements necessary for the upbuilding of animal tissues and for the renewal of the worn-out structures of the animal body. The cells and tissues of animal organisms, together with the majority of the animal fluids, are composed in great part, aside from the water they may contain, of albuminous matter or closely allied derivatives. During the life of the organism this material is constantly undergoing decomposition, and to make good this loss new proteid matter must be supplied. An increase in the amount of non-nitrogenous food will not supply the lack of proteid matter, for, as is well known, continued deprivation of the nitrogenous food-stuffs will ultimately result in nitrogen-starvation and death. Hence, no substance can serve permanently as food for the human body unless it contains a certain amount of this peculiar nitrogenized matter in a readily assimilable form. Further, it is not enough that a food contains nitrogen, but this element, to be of use to the body, must be combined in some peculiar way, as in the proteid molecule. Even such closely related nitrogenous substances as collagen and gelatin will not fully take the place of a true proteid, though containing as large or even a larger percentage of nitrogen. This is a point which needs to be emphasized, for we hear so much about the importance of nitrogen in the economy that we are liable to overlook the fact that nitrogen *per se*, or in the majority of its combinations, is valueless; that it is only in one peculiar form that nitrogen can be utilized by the animal organism, viz., in the form of proteid matter.

The proteid food-stuffs may therefore well be called the essential food-stuffs, in distinction from the accessory, as the fats and the carbohydrates. They serve a double purpose in the economy: they not only furnish by their metabolism a considerable amount of energy to supply the general needs of the body, but, as already said, they especially constitute the tissue-building and tissue-restoring foods, and as such are absolutely indispensable to the well-being of the organism.

It has been generally assumed that the animal and vegetable proteids have approximately the same nutritive value. This, however, is probably not wholly true, since there is a noticeable difference in the chemical composition of the two forms—a difference which might well be assumed to have some degree of significance. As a rule, to which there are marked exceptions, vegetable proteids contain somewhat more nitrogen and a correspondingly less amount of carbon than the animal proteids. Now it is well known that nearly all of the nitrogen entering the body in the form of proteid matter is ultimately eliminated as urea, but the amount of carbon contained in the urea is not equal to the carbon contained in the proteid matter ingested; in other words, the proteid food, in serving its purpose in the economy, is apparently broken down into a urea moiety, containing practically all of the nitrogen together with a portion of the carbon of the original proteid matter, while there remains a carbon-containing residue which may be either oxidized at once or stored up in the body as glycogen or fat, for possible future use. Hence, it has been argued that the lower the content of nitrogen and the higher the content of carbon in a proteid substance, the greater its nutritive value.

This view, which in general favors the idea of a higher nutritive value for animal proteids, must, however, be considered in connection with the relative digestibility and assimilation of the two classes. Such experiments as have been tried (mainly upon dogs) appear to indicate that the albuminous matter of muscle-tissue and the proteids of the blood, for example, are more readily digested and absorbed than many of the vegetable proteids, such as the gluten of wheat, and if this should prove to be a general rule it would constitute an additional reason for assuming a relatively higher nutritive value for

[1] Read before the Philadelphia County Medical Society, May 13, 1891.

the animal proteids. There is, further, an additional reason for this generally accepted view—one which is dependent upon the association of the proteid, rather than upon the character of the substance itself. Thus, the most common form in which the animal proteids are taken as food is flesh or muscle-tissue, in which the albuminous matter of the tissue is intimately associated with the nitrogenous extractives contained in the muscle-serum. These latter bodies unquestionably possess stimulating properties, and to this fact is to be ascribed, in part at least, the more invigorating action of the animal diet. Furthermore, the observations and experience of clinicians the world over have clearly pointed to the greater value of animal food in all conditions, either in prolonged illness or in prostration from any cause, when it is necessary to provide nourishment in a form capable of promptly invigorating the bodily powers, and with the least expenditure of energy on the part of the economy.

It has thus come about quite naturally that beef, being, perhaps, the most convenient form of animal material, has almost universally been employed in the preparation of concentrated foods. At first, from lack of knowledge of the true nutritive value of proteids, efforts were confined wholly to the preparation of concentrated extracts of beef, in which practically all of the proteid or nutritive matter of the tissue was rejected as either indigestible or worthless. When Liebig's extract of meat first came into use it was looked upon as containing in a small volume all of the nutritive and valuable portion of the tissue. The chemists and physiologists of that date even went so far as to say that the tastelesss residue, left after extraction of the flesh with hot or cold water, was as worthless as a stone, ignoring the fact that this residue of proteid matter could be digested as well as the fresh tissue, and made use of accordingly. Our knowledge on these subjects has steadily increased since then, and it is now generally known that an extract of beef made after the old plan of extracting the meat with boiling water is practically devoid of nutritive power. This is shown by the chemical composition of such extracts, as illustrated, for example, by Liebig's and Armour's extracts of beef, as well as by physiological experiment. I have recently analyzed these two widely known preparations, and the results fully substantiate the prevalent opinion regarding their nutritive value.

It is unnecessary for our purpose to make any comparison of these two products. They are essentially the same, both being composed mainly of the soluble extractives and inorganic salts of muscle-tissue, the former representing the waste products of muscle-metabolism. The content of nitrogen in both preparations is large, but this nitrogen is not to any extent available for the nutrition of the body. It exists, not in the form of proteid matter, but as a part of certain crystalline nitrogenous bodies soluble in 80 per cent. alcohol. One of the most important of these is creatin, a body always present in extracts of muscle, but which has little nutritive power. Introduced by itself into the animal system, it is neither stored up nor used up, but is simply excreted in the urine, practically unchanged. In the same manner, an extract of beef taken as food fails to show any direct nourishing power; it does not diminish the amount of true food required to keep up nitrogenous equilibrium or to sustain the bodily powers. Further, according to Kemmerich, an animal fed upon an extract of beef alone will succumb more readily than a like animal entirely deprived of food. Hence, the nutritive value of meat or muscle-tissue evidently does not lie in the soluble extractive matters, but rather in the rejected insoluble proteid portion of the tissue. Such extracts, however, are not by any means to be considered as worthless; they have, it is true, little value as foods, but, on the other hand, they are possessed of certain stimulating properties which render them of more or less value as stimulants or restoratives. Among other ways this stimulating action is manifested by a quickened and stronger heart-beat, mainly due, it is said, to the large amount of potash salts in the extract. An extract of beef may, therefore, be likened to an alcoholic stimulant rather than to a food. This, indeed, has for some time been recognized, and hence to supply the demand for a more nutritive product than the ordinary extract of beef there has arisen a class of preparations, under the name of beef juice or meat juice, which are stated to possess the nutritive properties of choice beef to a high degree, as evidenced by the presence of soluble albuminous matter. Such preparations, however, as I have analyzed fail to show in their chemical composition any evidence of great nutritive power. Thus, an analysis of Valentine's Meat Juice and of Wyeth's Beef Juice shows them to possess the ordinary characters of dilute meat-extracts, with a small addition of soluble albumin. This addition, however, is too small to have any practical significance. Certainly a food which contains only one-half of 1 per cent. of proteid matter cannot in any sense be termed a concentrated nutrient. Aside from this small amount of soluble albumin, these preparations are in no wise different chemically from an ordinary extract of beef, except that they are less concentrated.

As illustrations of a somewhat different kind of soluble food, containing considerable soluble albumin, we have Murdock's Liquid Food, and Bovinine, or Bush's Fluid Food. Chemically, these two food products are essentially the same.

Both contain only a small amount of solid matter (16 to 19 per cent.), but this is mostly nutritive, being composed in great part of soluble albumin. The appearance of the products, together with the small amount of mineral matter, and especially the small amount of phosphoric acid, would indicate that they are not prepared from muscle-tissue, but rather from blood. Further, all or nearly all of the nitrogen in these preparations is available for nutriment, as it exists in the form of proteid matter. Thus, in Murdock's Food, if the percentage of nitrogen, 2.29, be multiplied by the factor 6.25, on the assumption that the proteid contains 16 per cent. of nitrogen, the result is 14.31 per cent., just equal to the amount of soluble albumin found. Neither of these preparations is, however, equal in nutritive value to fresh lean beef, unless the soluble character of the albumin should tend to render it more easily available by the system, and thus raise the nutritive value considerably above the point indicated by the percentages of nitrogen or proteid matter.

In Johnston's Fluid Beef, an attempt has apparently been made to obtain a preparation which should possess the stimulating properties of a simple extract of beef and at the same time have the nutritive qualities of the tissue itself. This product apparently consists, as indicated by the analysis, of an extract of beef to which has been added a portion of the insoluble tissue, ground to a fine powder, and the mixture evaporated to a pasty consistency. Apparently, the soluble proteids of the tissue have been coagulated in the process, since the preparation contains no soluble or coagulable albumin. Of dry insoluble matter, the analysis shows 10.02 per cent., of which 9.12 per cent. is insoluble proteid matter. This practically represents the bulk of the truly nutritive matter contained in the preparation. The remainder of the nitrogen-containing substance is soluble in hot and cold water, being composed in great part of crystalline extractives, soluble in 80 per cent. alcohol, although there is likewise present some soluble gelatin or gelatoses, apparently formed by the hydrating action of boiling water on the collagen of the connective tissue. These, however, as previously stated, have little or no real nutritive power.

In any preparation of powdered meat, or of other insoluble proteid matter, there is a great tendency for the nutritive value of the product to be impaired by the long-continued drying to which the proteid material is subjected. The digestibility of the preparation is thereby diminished, and in a corresponding degree its nutritive power. Hence, as you know, in many cases the plan has been adopted of predigesting a portion of the proteid food-stuff prior to its desiccation, by which treatment the proteid matter is rendered partially soluble and diffusible, and hence more readily available, especially for weakened digestive organs. Such preparations, if properly made, must necessarily possess high nutritive value. As an illustration of such a food, I have analyzed a sample of Beef Peptonoids, manufactured by the Arlington Chemical Co., which I understand is prepared from the flesh-forming elements of beef, wheat and milk. At first glance, the small amounts of water and mineral matter in this preparation, together with the large quantity of soluble matter (more than half the water-free substance), are strongly suggestive of possibly high nutritive value. This, however, is at once contradicted by the low percentage of nitrogen, which cannot mean at the most more than 27.6 per cent. of proteid matter. In reality, about three-fourths of this preparation is composed of non-nitrogenous matter, mainly starch and sugar. Of soluble products of digestion—albumoses and peptone, directly available as nutriment—it contains only 7.31 per cent.; of insoluble proteid matter, about 20 per cent., of which certainly a large proportion is in the form of vegetable matter. Hence, as a concentrated tissue-restoring food, it is far below the possibilities. Taking the amount of total proteid matter as an index of its nutritive value, it is about 1.4 times as concentrated as fresh lean beef.

Another preparation of this same order, but which shows a much more promising chemical composition, is Mosquera's Beef Meal, a pre-digested, powdered meat. Its composition indicates that, aside from the small percentages of water and inorganic salts contained in it, the entire product is composed of nutritive matter; in other words, about 90 per cent. of the preparation is nutriment, of which 77 per cent. is albuminoid matter and 13 per cent. fat. Further, of this 77 per cent. of albuminoid matter, 29.43 per cent. is in the form of soluble products of digestion, albumoses and peptone, ready for immediate assimilation. In other words, nearly all of the dry matter soluble in water (31.26 per cent.) is composed of proteid substances directly available for the needs of the body, with a minimum amount of work on the part of the digestive system. That portion of the product insoluble in water is composed almost wholly of albuminoid matter and fat. This albuminoid or proteid matter (47.8 per cent.), however, is, I think, in a form more easily available for nutriment than ordinary dried muscle-tissue. In order to make clear my reasons for this belief, I must digress for a moment to call attention to the character of the digestive ferment employed in the peptonization of the beef-tissue. A short time ago it was discovered that the juice of the pine-apple contained a ferment capable of digesting proteid matter. This fact has, I understand, been made

use of in the preparation of the food-product named, the process consisting essentially in digesting fresh beef with the juice of the pineapple until the proteid tissue is partially peptonized, and then desiccating the product. At present, experiments are being carried on in my laboratory with a view of ascertaining something regarding the chemical and physiological action of this peculiar ferment, which, up to the present time, has not been scientifically studied. The juice obtained from a ripe pineapple is decidedly acid, possessing, on an average, an acidity equal to about 0.3 per cent. of hydrochloric acid. This juice possesses in a marked degree the power of dissolving proteid matters, especially coagulated egg-albumin and blood-fibrin. This proteolytic action is apparent both in an acid and in a neutral fluid, the action being most energetic, however, when the fluid is neutral. Such portion of the albumin as is dissolved is converted into soluble albumoses and peptone, but we have noticed that when an excess of proteid matter is present, this excess, although not dissolved, is plainly acted upon, being disintegrated and giving other evidence of some kind of change which apparently renders it more readily soluble in the natural digestive juices than ordinary muscle-tissue. For this reason I am inclined to the belief that the insoluble proteid matter of the Mosquera Beef Meal is more readily available for nutritive purposes than ordinary desiccated beef.

VENTRAL HERNIA; RUPTURE OF COVERINGS; ESCAPE OF INTESTINES AND THEIR EXPOSURE FOR EIGHTEEN HOURS; RECOVERY.

BY JAMES J. McKONE, M.D.,
SURGEON TO ST. JOSEPH'S HOSPITAL, TACOMA, WASHINGTON.

Mrs. J., aged forty-nine years, mother of one child sixteen years of age, was twelve years ago treated for what her physician called an abscess of the abdominal wall. She was confined to bed for ten months. When she got around again she, for the first time, noticed a hernia. With the exception of weakness from this she suffered no more until the current year, when she noticed the skin over the "tumor" becoming black; she consulted a physician, who told her it was gangrene of the skin, and who applied treatment.

February 10th, about a month later, she fell from a stoop, and the gangrenous tissue gave way for an extent of four and one-half inches, from just below the umbilicus in a direction downward and outward toward the centre of Poupart's ligament on the right side. Through this wound thirty-four inches of the small intestines escaped. The patient walked into the house without assistance and went to bed. Her husband covered the gut with a towel and sent for Dr. Norgren, a Norwegian physician. The latter not being at home, and the husband being unable to speak a word of English, he waited for Dr. Norgren till the following morning, the intestines meanwhile lying on the abdomen covered by the towel.

I was called to the case by Dr. Norgren at 3 P.M. The accident had happened at 9 P.M. of the previous evening, making the time during which the intestines had been exposed eighteen hours. The towel was found adherent to the intestines; after it was carefully removed by irrigation with hot bichloride solution, the exposed coils of intestines were found matted together by recent adhesions, which were easily broken.

The patient's condition was good; the pulse 90 and full; the temperature 100°. Ether was now administered, and examination showed that the abdomen was traversed by thick bands of adhesions, most of which ran between the two widely separated portions of the abdominal fascia. These bands were tied and separated, the abdominal cavity thoroughly irrigated with hot water and the intestines returned. On account of the large amount of gas it was necessary to puncture the gut with a small trocar before reduction could be accomplished. The cavity of the abdomen was again thoroughly irrigated, and the wound closed by a continuous silk suture; after cutting away the gangrenous tissue, which consisted of a strip one inch wide in the whole length of the wound, a glass drainage-tube was inserted in Douglas's pouch and brought out at the lower angle of the wound.

It was impossible to perform an operation for the radical cure of the hernia, as the intestines above and to the right side of the rent were firmly adherent to the inner surface of the integument by adhesions which could not be separated, this integument constituting the sole covering of the intestines, the peristaltic action of which was distinctly visible through the thin tissue. The dressing consisted of bichloride gauze, covered by absorbent cotton soaked in glycerin, the whole being retained by a wide binder.

The patient recovered quickly from the anæsthetic, which was administered by Dr. A. E. Burns, of Brooklyn, and had an almost uninterrupted recovery. The temperature rose to 103° on the fifth day, but promptly subsided after free purgation with sulphate of magnesium. The glass tube, which had discharged quite freely, was removed on the third day, when a rubber one was substituted. After the first day there was scarcely any pain; the patient's appetite returned immediately; she was fed on raw eggs and milk for ten days, when an ordinary diet was allowed. The dressing was removed on the eighth day, and primary union found to have taken place, except in the track of the drainage-tube, in which granulation subsequently took place. The patient is now up and around, and able to attend to her household duties.

This is a most remarkable case. Here is a woman, with most unhygienic surroundings—the shanty in which she lived consisting of one room, which served as bedroom, kitchen, and cellar, lying for eighteen hours with thirty-four inches of her intes-

tines outside the abdomen, and peritonitis well advanced, subjected to the additional shock of an anæsthetic and manipulation, who goes on to recovery with scarcely a bad symptom. That she did not have a fatal traumatic peritonitis is probably due to the fact that continued irritation of the peritoneum for years had made it tolerant of abuse. This may also account for the absence of shock. As to sepsis, I have nothing to say.

PUNCTURED FRACTURE OF THE SKULL, IN WHICH THE SUPERIOR LONGITUDINAL SINUS WAS WOUNDED.[1]

BY WILLIAM J. TAYLOR,
SURGEON TO ST. AGNES HOSPITAL.

FOR the history of this case I am indebted to Dr. John B. Maloney, resident physician.

W. R. J., aged thirty-five years, was admitted to the surgical wards of St. Agnes Hospital, about midnight of June 25, 1890, suffering from a punctured fracture of the vertex of the skull. He was brought to the hospital in a patrol wagon, but walked into the wards. Except for a little anxiety and a disposition to quarrel on not being immediately shown to bed, it could not have been known that anything was wrong.

The man could give no account of the injury, but the police officer stated that he had been struck on the head by a pick, at 1 o'clock in the morning, just half an hour before he was seen by me. He became delirious, spoke of his friends, and did not recognize those about him. At half-past one o'clock he was placed under the influence of ether, and the wound examined.

Two inches from the glabella, and about one-half inch to the right of the median line, was a small wound of the scalp, having an appearance as though made by a pick or other pointed instrument. The skull beneath was punctured, and the bone broken into small fragments, which were driven down into the brain-substance. The opening was just large enough to permit the insertion of the finger. The wound was enlarged with a knife, and the scalp turned back. The edges of the skull were cut away by a rongeur forceps, and the depressed pieces of bone removed. It was then seen that the wall of the superior longitudinal sinus had been wounded by a fragment of bone. The hæmorrhage was profuse. Pressure with forceps controlled the bleeding until a larger opening, two and a quarter inches long by two inches wide, and extending one-half inch to the left of the median line, was made in the bone, thoroughly exposing the sinus, and including the whole area of fracture. The dura was torn and the brain itself lacerated. Blood flowed freely from the small tear in the wall of the sinus, which was about one-quarter of an inch long. Packing would not control the hæmorrhage. The patient having already lost a large quantity of blood, and as the imperfect light made it difficult to see, the opening in the sinus was included in the grasp of a pair of hæmostatic forceps, and the hæmorrhage completely controlled; the forceps were allowed to remain. The dura was freely opened, and the brain examined with the finger. The wound was then carefully disinfected, so much of the wound in the dura as was possible was brought together with catgut sutures, and the whole was packed with idoform gauze.

The patient reacted nicely from the operation. At the end of seventy-two hours the hæmostatic forceps was removed from the wound in the sinus; there was no hæmorrhage that was not easily controlled by a packing of iodoform gauze gently applied. On the third day there were symptoms of intense cerebral irritation, with delirium and restlessness, so that it became necessary to strap the man in bed and give morphine and bromides. For some days he passed both urine and fæces in bed, and was extremely weak. He gradually regained strength, and his mind became clear again. The wound healed by granulation. The patient was discharged from the hospital on August 29th entirely well, and returned to his work.

[1] Read at the meeting of the Philadelphia Academy of Surgery, April 6, 1891.

ORIGINAL LECTURES.

SARCOMA OF THE SCROTUM; VESICAL CALCULUS; CATHETERISM; EXCISION OF BUBO.

Abstract of a Clinical Lecture delivered at Bellevue Hospital.

BY JOHN W. S. GOULEY, M.D.,
VISITING SURGEON.

GENTLEMEN: The case of tetanus which some of you saw last week succumbed on the fourth day of the disease. Opisthotonos was almost constantly present during the last twelve hours of life; but only on two occasions was there any laryngeal spasm. At the necropsy only a few ecchymotic spots in the brain and a very slight effusion in the ventricles were found. The spinal cord was not examined.

The case of tuberculosis of the bladder which I showed you at a previous clinic is progressively failing, and although his bladder is irrigated daily with a solution of peroxide of hydrogen, there is still abnormal frequency of micturition. The testicles also have since become implicated in the tuberculous process. A microscopical examination has confirmed the diagnosis of tuberculosis. Such an examination is capable of rendering valuable assistance in the diagnosis of a not very common condition.

To-day I wish to show you the results of the post-mortem examination in a case of scrotal disease which you saw recently. Microscopical examination corroborated the diagnosis of round-cell sarcoma, or, as I prefer to call it, endothelioma. The patient was a man, fifty years old, having a good family history and no history of venereal trouble, who a year previously was injured by stones falling upon him while working in a sewer. The parts most severely injured were the back and scrotum. The scrotum was swollen and painful for six weeks, but at the end of two months the patient had en-

tirely recovered. About ten months later the right side of the scrotum became swollen and painful, and one month before admission to the hospital, the left side also became swollen. The enlargement was accompanied by pain running up on each side into the groin. The tumor had doubled in size within the last two weeks, and during the same period the patient had lost fifteen pounds in weight. Night-sweats had also become troublesome. You notice the great weight of the tumor, which probably gave rise to the dragging pains in the course of the spermatic cords. On section the right testicle is found to be quite hard, the sarcoma having received an accession of fibrous tissue; it therefore becomes an ino-endothelioma. The left testicle is not so hard as the right. Unfortunately, the necropsy included only the testicles, bladder and kidneys; for there was reason to suspect that the lungs had likewise become involved. The bladder was much inflamed, but the ureters and pelves of the kidneys were normal. The kidneys were the seat of interstitial nephritis.

The case of necrosis of the pelvic bones and stone in the bladder which I showed you recently would undoubtedly be temporarily relieved by the removal of the stone; but the operation would be speedily followed by a re-development of the calculus, which would be repeated so long as there was any communication with the diseased pelvic bones.

Let me now invite your attention to this man, seventy years old, who has cystitis, from prostatic obstruction, and a contracted bladder. He has the appearance of one suffering from some disease of the kidney; he is emaciating rapidly, and has irregular chills, which in themselves are almost pathognomonic of pyelitis. This man has brought a soft catheter with him, but it is far too small to be entrusted to the hands of a patient; it is not only safer but also easier to pass a moderately large instrument. The patient ordinarily should be provided with a No. 9 catheter of the English scale, and he should be instructed to use it, if possible, not more than five times in twenty-four hours. As the last portion of urine flows out through the catheter it is seen to be mixed with pus. As the patient withdraws the catheter he neglects to occlude the distal opening with his finger, and consequently a stream of pus dribbles along the whole length of the urethra.

The next patient comes with swollen glands in the groin. Such a condition is often the result of an injury to the foot, such as a "stone bruise," but it is far more frequently due, as in this case, to infectious matter carried from a chancroid through the lymphatics to the glands. When such a chancroidal bubo has suppurated freely, it is best to make a free incision into it and disinfect the parts thoroughly. Before this stage is reached it is wise to excise the whole mass of glands and endeavor to secure primary union. In doing this, care must be taken that the gland be not broken; for, if this occurs, the whole wound may be converted into a huge chancroid. The operator must also be careful that the fingers are free from sores or "hang-nails," lest his fingers become infected and chancroids develop on them. It is not precisely known what the chancroidal infection is, but it certainly is an essentially local infection, although the same microörganisms are found as are observed in chancres. In performing the operation of excision, a free incision should be made parallel to Poupart's ligament, thus exposing the glands, which are then all enucleated, whether diseased or not. The wound is thoroughly cleansed and its edges united by sutures.

MEDICAL PROGRESS.

On Deaths from Chloroform and Ether since the Hyderabad Commission.—DR. LAURENCE TURNBULL, of Philadelphia, recently read a paper upon anæsthetics before the American Medical Association, of which the following is an abstract:

The history of the First and Second Commissions, and the conclusions which they arrived at.

The opposition to the First by the physiologists and practical administrators of anæsthetics, and the adding of Dr. Brunton to the Second Commission, by the efforts of the editors of the London *Lancet*.

The opposition to the conclusions arrived at by the Second Commission, more especially in England and the United States, until the London *Lancet* advised a more careful study and record of deaths.

With this view, Dr. Turnbull has made a most careful collection of all the deaths both from chloroform and ether, from every available source, assisted by several friends. These 43 deaths have been arranged in a tabular form, giving the name, age, history, nature of operation, anæsthetic used, amount used, apparatus employed, posture, how long under influence, whether heart or respiration stopped first, means to resuscitate, how long continued, post-mortem, cause of death, and reference.

He gives as the result of his examinations a brief analysis of the table as follows:

"The whole number of deaths from chloroform and ether is 43. Of this number 39 were deaths from chloroform and 4 from ether. In 5 cases the cause of death was syncope from chloroform, and in 13 cases the heart stopped first. In 10 cases the respiration stopped first, and in 4 cases the heart and respiration ceased at the same time. In 1 case cyanosis, no pulse. In 12 of the cases it is not stated whether heart or respiration stopped first.

"The cause of death in case No. 37 was due to some peculiar idiosyncrasy. In No. 22 there was paralysis of the pneumogastric nerve, the direct effect of the chloroform, superinduced by efforts at vomiting. After a careful consideration of the report of this case, and as there was cyanosis after vomiting, suffocation was suspected, but this cannot be confirmed, as there was no autopsy. In case No. 20 there was given as cause of death, 'reflex paralysis of the heart,' but there was no post-mortem to confirm this statement.

"There were 21 post-mortems, most of them very imperfect. Nos. 24, 25, 36, and 37 were full and complete, and Nos. 15, 19, 21, 28, and 34 were fairly described in this particular. Many of the cases were very imperfect in their detail, especially those from New South Wales.

"Sufficient cases are given to show the absolute importance of the method of administering chloroform, and to indicate the necessity of the most careful attention to the pulse and respiration.

"The only death from anæsthetics in Philadelphia

during the period stated was one from chloroform (No. 36), while there was not a single death from ether in the numerous hospitals and operations—indeed, we may say, in the thousands of operations.

"The 39 deaths from chloroform added to the 375 collected by us from our work for Dr. H. C. Wood (contained in his address before the International Medical Congress at Berlin) make, up to the present time, 414 cases—the actual number being far greater on account of cases never reported.

"The exceedingly small number of deaths reported from ether demonstrates its great safety; still, it will and does kill, and we notice that the feeble, and persons suffering from malignant disease, are more apt to be its victims (see Nos. 10, 11, and 18). We would advise its use as an anæsthetic, and also would advise a full study and knowledge of the best mode of using it, which we judge is not common in Europe."

Virchow on Koch's Method.—In a recent debate in the Prussian House of Deputies on the granting of additional funds for the Koch Institute for Infectious Diseases, Professor Virchow, among other things, said: "I have never expressed any opinion to my professional brethren on the fundamental value of Koch's method, simply because I do not know how such an opinion can be formulated. I have only communicated a series of personal observations, which have indeed been of service in directing attention to one part of the question, and have especially enforced the need for calm and objective study that is so requisite in these difficult subjects. Dr. Graf [a previous speaker] is still steeped in optimism. He has no right to speak of the importance of the matter until he has proved it, and it is, in fact, not proved. But it would be just as foolish if we, as pessimists, were to say, 'The matter is of no importance whatever; it is only a poison, a noxious substance.' The question has, in fact, been developed in unexpected directions, leading in many quarters to the hope that very striking results can be produced by these powerful measures—a hope which we cannot yet say has been annihilated. As a matter of fact, there is not a single case known in which any form of tuberculosis has been cured by this means. All cases which were for a while regarded as cured have afterward been found to relapse; the improvements were merely temporary, such as often occur under other treatment. On the other hand, there is no doubt whatever, that many serious dangers have been revealed, with regard to which I may claim some merit for myself. Nevertheless, from what I have just said, no doctor who feels called upon to make further trial of the remedy, could by any possibility lay himself open to prosecution. The original trials were, in point of fact, made after results had been obtained in animals, which seemed to justify the expectations that were raised regarding the discovery."—*Lancet*, May 23, 1891.

The Anal Reflex.—RASSOLIMO (*Neurol. Centralbl.*, No. 9, 1891) finds that the anal reflex is exaggerated in neurasthenia, together with general exaggeration of the skin-reflexes; in transverse myelitis, high in seat; and in organic diseases of the nervous system with hyperæsthesia. The reflex is enfeebled or abolished in multiple neuritis, when the sacral plexus is involved; in tabes, when the sphincters are deranged and there is anæsthesia in the region of the anus; in myelitis involving the lower portion of the lumbar enlargement, usually associated with anæsthesia of the rectum, anus and urethra. The reflex is preserved in functional neuroses involving the evacuation of urine, defæcation and the sexual functions.

The Pathological Anatomy of Acromegalia.—At the Tenth International Medical Congress, MARINESCO reported the results of the studies which he, in conjunction with Marie, had made of the pathological anatomy of acromegalia. In the great toe all the structures were hypertrophied, especially the connective tissues. Even the membrana propria of the sweat and sebaceous glands were thickened. The hypertrophy was most marked in the sheaths of the cutaneous nerves, which were degenerated. The changes were less marked in the larger nerves. The bones presented not only columns of hyperplasia, but also true osteogenesis, leading to increased length and thickness. The macroglossia is dependent upon a thickening of the connective tissue and of the muscular bundles of the tongue. The lingual and hypoglossal nerves showed only slight changes—from which it is to be inferred that no relation exists between the hyperplasia of the tongue and changes in the nerves. The cervical sympathetic, especially the lowest ganglion, was decidedly sclerotic. The kidney presented evidences of nephritis, especially cortical. The follicles of the atrophied thyroid gland were hyperplastic and cystically degenerated. The nasal mucous membrane was thickened, its surface tuberculated, the vessels hyperæmic and in places sclerotic and obliterated. These various alterations furnish an anatomical substratum peculiar to acromegalia and distinguishing it from similar affections.—*Münch. med. Wochenschr.*, May 19, 1891.

The Influence of Light upon Pregnancy and upon the Fœtus.—As a result of experiments with mice, VICARELLI (*Annal. di Ostetrica, etc.*, Dec., 1890) found that the absence of light had a tendency to cause early abortion, but did not otherwise modify the course of pregnancy. If the mother was kept in the dark during pregnancy, the development of the offspring was most retarded; the retardation was less decided if, after birth, the offspring were no longer kept in the dark; and least in the case of offspring kept in the dark after birth, the mother having passed pregnancy in the light. The highest degree of development was attained if the mother and the offspring after birth lived in the light.—*Centralbl. f. Gynäkol.*, May 23, 1891.

The Therapeutic Employment of Humon Lymph.—MAGNANT (*Bulletin Gén. de Thérap.*, May 15, 1891) proposes to treat pulmonary tuberculosis and other conditions with subcutaneous injections of lymph obtained from blisters by vesication in persons not affected with the disease to be treated. The fluid is sterilized by exposure to prolonged heat, not above 158° to avoid coagulation, and is kept in tightly stoppered bottles. In a number of cases, including a varicose ulcer of the leg, a diabetic ulcer, an enlarged cervical gland, and two cases of pulmonary tuberculosis, excellent results are reported.

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SATURDAY, JUNE 27, 1891.

PUBLIC BATHS.

As a means of public sanitation, the superiority of the "rain bath" (shower bath) over the tub bath forms the theme of a paper contributed to the *Dietetic Gazette*, for May, 1891, by the accomplished editor of that journal. DR. BARUCH points out that the difficulty of keeping tubs clean is the greatest drawback to the public bath, in which facilities must be offered to large numbers in rapid succession. Another obstacle to be overcome is the large quantity of water needed. In a large swimming-tank privacy is not attainable, and either here or in the tub one is immersed most of the time in soiled water.

These difficulties are very simply and effectually overcome by providing a number of small apartments in which the bather stands beneath an obliquely descending "rain" of warm water. "Imagine for a moment," says DR. BARUCH, "a begrimed coal-heaver attempting to rid himself of the accumulation from his day's labor in a tub bath. It would not be long ere he would be immersed in a concentrated solution of coal dust, unless he had a lavish supply of warm water. Let the same individual enter the bath I propose. Being thoroughly soaped, he stands upon an inclined asphalt floor under a large vase from which with some force a coarse spray is descending. Both hands being as free as in the tub, he may rapidly rid himself of all accumulation, which the descending stream would wash away, flowing at once from him upon the inclined floor and thence into the gutter."

Public baths upon this principle have been in use in Europe since 1883, when one constructed upon LASSAR'S suggestion was practically tested at the Hygienic Exposition held in Berlin. A corrugated tin structure of 40 square metres (48 square yards) area was divided into male and female sections with ten bath-cells, two closets, kitchen, and drying-room. In 1887 the plan was put into operation at Vienna, an old building being divided into seventy-two bathing-cells, furnishing 40 litres (40 quarts) of warm water, soap and towel, for the equivalent of two cents in our money. In Berlin a public bath association has erected a building where baths of various kinds are offered at prices varying from 2½ cents to 12½ cents. In six months 103,000 baths were taken and about $7000 received. In Frankfort, the banker THEODOR STERN opened a public "rain" bath which is a model of its kind, costing $5000. Baths, with soap and towels, are furnished for 2½ cents.

In Göttingen and Weimar these baths have been established in connection with the public schools. The bathing is done during the school hours, by a well-arranged plan of relays, which does not interfere with the instruction. The Director of Schools at Weimar is quoted as follows: "The freshness and pleasure for study after the bath, the cultivation of a desire for cleanliness, the promotion of health in our children, offer such decided results in this arrangement that I cannot refrain from urging other schools to establish similar baths." In many German cities manufacturers have provided shower-bath facilities in their factory buildings for the use of their workmen.

At the suggestion of DR. BARUCH, this method of bathing has been substituted for the plunge-bath at the New York Juvenile Asylum. Sixty-eight sprinklers, twenty inches apart, and connected by pipes near the ceiling, have been erected over the site of the former bathing-tank. The water is heated by admixture with steam. "When the sprinklers are all turned on, the children stand in a shower of warm water flowing upon them with some force. They soap and scrub themselves, while this warm rain rinses them off, and the water flows away at once into the sewer. In ten minutes this batch is clear

and another takes its place. Two hundred and eighty are now bathed per hour, while formerly only eighty could be cleansed in the plunge-bath. The quantity of water is only one-eighth of that formerly used." The Association for Improving the Condition of the Poor is now erecting a building in New York City, in Centre Market Place, upon plans drawn according to DR. BARUCH'S suggestion, to be called "The People's Bath," which will accommomodate 500 bathers daily, and a similar smaller structure will soon be put up in that city by the trustees of the fund instituted by BARON MAURICE DE HIRSCH for the benefit of Jewish refugees from Russia.

We have called attention to this matter in the hope that other American cities, and especially Philadelphia, will promptly fall into line. The free swimming-baths, maintained by public and private benevolence during a few months of hot weather, are good in their way, but the plan advocated in the article from which we have so freely quoted is vastly superior. It would be simply a waste of words to dilate further upon a fact so evident. We trust that some of the many liberal and public-spirited citizens in whom our city takes just pride may be induced to give the subject consideration, and we are sure the medical profession will cordially coöperate in any good plan toward establishing in Philadelphia a "People's Bath."

THE POWER OF WILL IN DISEASE.

AFTER a hundred years of history and education in scientific medicine, and in a country where shrewd common sense has been developed in the most backward-looking mind—at such time and under such circumstances it would have seemed impossible that the incurably sick, the paralyzed, and the maimed should by thousands flock to a priest to be cured of their diseases. The newspapers say the immense depot at Pittsburg has of late seemed like a hospital, filled as it has been with the poor unfortunate invalids seeking FATHER MOLLINGER'S supernatural aid to make them well. The Father anoints and blesses, and the young man who "had not walked since childhood," upon command goes unassisted "from the altar-rail to the rear of the church, to the amazement of the vast audience." Though the report says the great majority are sadly disappointed—even the squarely impossible cannot be done in these times—a number are found that, with functional affections, under strong emotion, exhibit a change, or an increase of strength, so that the belief in "the power" is kept living.

What is it that makes FATHER MOLLINGER, Christian science, faith cure, medical spiritualism, and to some extent homœopathy possible in the nineteenth century? Were there absolutely no element of truth in these reported "cures," even the dullest dupe would come at last to some consciousness of the hocus-pocus. The manure of the soil nourishing these delusions is a truth too often ignored and neglected by scientific medicine. It is the truth of the power of the emotions, of the will—of the spirit, if you please—over the flesh; of life over the beginnings of disease, and even over disease and death itself. Races and nations differ greatly in their power of resisting and overcoming disease, simply by reason of the characteristic attitude of the will and the disposition of the patient toward the physical illness. Just so do all, even brothers, differ in the same way. Thousands are physically sick because mental resolution and spiritual domination is weak and illogical. This is strikingly true in reference to the beginnings of disease. The secret of continuous good health does not always consist merely in physical resistance or robustness, but in sharply conquering the subtle beginnings of corporeal abnormality by pure will-power. There are two homologues of this power that illustrate it exactly. Who has not seen whimsicality, crankiness and oddity by self-indulgence slowly degenerate into monomania, and even into downright insanity? And again, who can doubt that in the commencement many such persons are perfectly conscious of the abnormal tendency, and are, moreover, perfectly capable of *not* doing the ridiculous or self-forgetful things. They are at first driven by no imperious necessity. It is precisely so when one gives way to immoral courses of life. At first the voice of conscience is clear; by and by control is lost and the voice is entirely silent. The analogies obtain in the matter of health. The adage, "Resist the beginnings of evil," holds also here. All disease begins subtly, almost insensibly, as chill, lassitude, malaise, etc. Caught at this stage and fought down by a virile volition, that which by self-indulgence would have proceeded to genuine fever and illness may often be resolved into routine normality of health. A brisk walk of five miles in the teeth of exhaustion and weariness has saved many from severe illness. And so in types of disease that are, if one may so speak, more

organic. The fact cannot be disputed that many who have believed themselves incapable of walking, under powerful emotion their own will being supplemented and "relayed" by that of another, do really find that they can walk a little. Our confutation of the priest's supernaturalism consists precisely in this proved power of the will. Doubtless orthopædic appliances are often given patients who need only resolution, encouragement, and repeated trial in order to develop by exercise the strength that the crutch really conceals or neutralizes. In the sick-room every experienced practitioner knows how much depends upon the *morale*, the resolution of the patient, and how even death and life may depend upon the will. All this, when we read it, seems trite enough, but its significance is lost sight of in the battle of rival theories of disease, and to some it must seem the froth of nonsense. But the practical lesson of the very obvious truth consists in the simple duty of arousing the will to self-confidence and corporeal domination. As has been well demonstrated, the best cure for the most outrageous hysteria is mental and volitional control—supplanting the patient's diseased imagination by a healthy one—true faith-cure in a legitimate and genuine sense. The puppets of fashionable automatonism are prone to run to the doctor for every ache, real or suspected. To indulge them in their folly sometimes seems to the physician not without a certain worldly excuse. But if a higher ethical ruling is adhered to, duty will counsel encouragement of prophylaxis and hygiene; and among the means of forefending disease an energetic domination of will over the body is often the most vital and important.

WAS THE SNOOK-HERR TRAGEDY DUE TO ICE-CREAM POISONING?

WHEN the manuscript of DRS. MITCHELL and HYNDMAN was sent to THE MEDICAL NEWS, the editor, provisionally accepting the conclusion that arsenic was the cause of the poisoning, was struck by the failure to find in the post-mortem investigations definite traces of arsenic, by the improbability of toxic quantities of arsenic having gained entrance to the food by accident, and also by the lack of motive for poisoning.

Remembering that DR. HULL had made some experiments that tended to prove that the modern ice-cream freezer is in reality a galvanic battery, we asked DR. HULL to summarize the results of his experiments and forward them to us for publication. In complete ignorance of the conclusions of DRS. MITCHELL and HYNDMAN—indeed, in ignorance of all the details of the SNOOK-HERR cases—DR. HULL has theoretically and unconsciously established conclusions that may be of service to those investigating these sad cases. The suggestion of uniting the two sets of facts is our own. It will be noticed that the symptoms presented by the patients are precisely those to be expected from poisoning by the salts of zinc or copper; that the discovery of the copper in the post-mortem examinations would be explained, and also the absence of arsenic-findings in definite quantities. Against this possible explanation would, among other things, be the assertion that those who ate only ice-cream had no symptoms of poisoning. In the first place this would need very clear confirmation in order to squarely offset the error certain to arise from the reports of excited, unscientific persons, etc. But a far more important consideration would be one to which DR. HULL does not allude, but one which, we would suggest, may explain how, of two persons eating cream from the same freezer, one might be killed and the other be unharmed. We allude to the improbability of thorough mixture of the toxic agent throughout the whole mass of cream. In a thick, pasty substance like ice-cream the poison deposited at isolated points would not be uniformly disseminated throughout the cream except by very prolonged turning and stirring.

This view, thrown out by us as a mere suggestion, may, to those with closer clinical experience and study of these cases, appear inadequate and worthless, but from this distance, and in view of the impenetrable mystery surrounding the whole affair, it would, at least as a working hypothesis, appear worthy of the consideration of those specially interested.

SUPERCILIARY ENTROPIUM.

EVERYONE has noticed that after the age of forty or fifty there is often, especially in men, an excessive growth of the hairs of the eyebrow. In such cases it will be found that the hairs frequently evince a tendency to curve downward toward or within the palpebral opening. In examining an eye to discover the cause of conjunctival irritation or congestion, the ophthalmic surgeon, in elevating the upper lid, thoughtlessly draws these hairs away with the thumb, or the patient unconsciously raises

the eyebrow the better to expose the globe. In this way conjunctival irritation due to incurvation of the eyebrow cilia may frequently escape the physician's notice. We have seen in private practice three cases of conjunctival inflammation distinctly traceable to this cause. One of these was of peculiar interest, because the irritation was of the conjunctiva of a socket, from which the eyeball had been enucleated. So far as known, this condition has never been described in the literature of ophthalmology. The treatment, of course, suggests itself. In designating this affection *superciliary entropium*, we do not wish to dictate the nomenclature, if a shorter or better term can be found.

SOCIETY PROCEEDINGS.

THE CINCINNATI ACADEMY OF MEDICINE.

Meeting of June 1, 1891.

G. S. Mitchell, M.D., *President*; T. V. Fitzpatrick, M.D., *Secretary*.

DISCUSSION OF A STUDY OF THE SNOOK-HERR POISONING CASE.

PROFESSORS MITCHELL and HYNDMAN submitted a study of the Snook-Herr poisoning case. [See the current issue of THE MEDICAL NEWS, p. 709.]

In the discussion that followed, DR. WHITTAKER said:

As the symptoms read, the differential diagnosis would include the consideration of cholera morbus, typhoid fever, trichinosis, meat-poisoning, mushroom-poisoning, and a mineral poisoning, most especially arsenic.

Cholera morbus might be excluded because of the large number of people affected, but chiefly because of the persistence of the symptoms after the use of evacuants and morphine subcutaneously.

Typhoid fever sometimes begins with gastro-enteric signs so intense as to resemble poisoning, but this is exceptional. It would be impossible to conceive of forty cases all beginning in this way. In the absence of this knowledge the condition of the mind and the course of the temperature would exclude the diagnosis of typhoid fever.

Trichinosis rarely shows signs of such intensity at the outset, and simultaneously in so many persons. Multiple cases of trichinosis have been considered as true cholera, or as poisonings, but not in late years since we have had definite knowledge concerning trichinosis. Characteristic muscle-pains and œdemas at the end of the first week mark this affection.

Mushroom-poisoning also leads to severe vomiting and diarrhœa at periods varying from six to twenty-four hours after ingestion, with subsequent nervous symptoms, and unless the history of the case be clear (no mushrooms eaten, for instance) or fragments of fungi be found in the discharges, the resemblance to arsenical poisoning may be complete. The speaker had occasion, a few years ago, to treat one of his fellows in Cincinnati for fly-fungus poisoning (muscarine) and was impressed by the signs of intoxication which supervened within one hour after ingestion. The patient chattered and raved incessantly, and was in and out of bed in constant excitement which he strove in vain to subdue. Inhabitants of Kamtschatka partake of this fungus purposely to secure this kind of intoxication, and the poor are said to drink the urine of these rich epicures to indulge the same passion. In the case reported the stomach-tube quickly relieved the physician.

Meat-poisoning, which it is now the fashion to call ptomaine poisoning, we know only in connection with pork and veal. Most of the cases thus reported—as at Andelfinger, 444 cases, 10 deaths; Kloten, 657 cases, 6 deaths—on examination turn out to have been trichinosis or typhoid fever. Nevertheless, undoubted cases, independent of these diseases, have been reported. Perhaps the best-observed cases were reported by Gärtner, of Jena: fifty-eight cases in twenty-five families; one death, in a laborer aged twenty-one, taken ill in two hours and dead in thirty-five hours after taking the food. The other fifty-seven cases became sick in from twenty-four to thirty hours and recovered in from a few days to two weeks. The main symptoms were enteritis, prostration, sopor. The discharges were studied bacteriologically with the discovery of a so-called bacillus enteridis, which was cultivated and inoculated in various animals. As a rule the symptoms of meat-poisoning show themselves later than those of arsenical poisoning, sometimes not until the day following the ingestion of the poison. Groenouw confirms the statement of Ulrichs that in all severe cases of meat-poisoning there is both dilatation of the pupils and disturbance of accommodation.

Arsenic shows itself by gastro-intestinal irritation and narcosis. The practitioners in these cases, debarred from tests of the vomited matter at the outset, by the absence of all knowledge of other cases, very properly had the urine (in which arsenic has been detected at any time from five hours to two weeks after it has been taken) examined as soon as suspicion was aroused. Arsenic has been found in the liver four hours after administration and has been wholly eliminated from the body in two weeks. Flaudin found that fifteen grains might disappear wholly from the body of animals in three days. It is pretty universally distributed over the body, including the nervous system and the bones. In his experiments with animals, Scolosohoff found arsenic thirty-six times oftener in the brain and cord than in the liver, and in the muscles four times oftener than in the liver. Rand reports a case of exhumation and examination of the contents of the stomach two weeks after death, with negative results, and a re-exhumation and examination of the soft parts two months after death, with positive results. Sonnenschein found arsenic unequally distributed in the bones, but mostly in the pelvis and adjacent vertebræ. So arsenic has been detected in bodies three, eight, ten, by Altschul fourteen, and by Steinhauser twenty-two years after death.

Inasmuch as the symptoms vary so much that an absolute conclusion cannot be based upon them, or upon the lesions, though both symptoms and lesions read like arsenic in these cases, absolute proof here must rest upon exhumation of the bodies of some of the six victims and examination of the viscera and bones.

DR. G. A. FACKLER agreed with the essayists that the evidence presented in the paper argued strongly in favor of their theory. Although it cannot be positively asserted that arsenic was the toxic agent, still, assuming this to be the case, the appearance of all symptoms can be readily explained. He could not, without exception, agree with the previous speaker as to the discovery of arsenic in bodies of all individuals who had died from the poisonous effects of that drug, even if such bodies be exhumed months after death. It is true that a large number of cases have been reported to substantiate this statement. Yet an equally large number have been reported that would contradict it. We can easily reconcile such apparent contradiction by remembering the fact that arsenic is rapidly eliminated. The first class of cases, then, includes those in which the period between ingestion of the poison and death is brief—too brief to insure complete elimination. The second class, to which the one under discussion belongs, includes those in which considerable time has elapsed after the administration of arsenic until a fatal effect ensues, thus permitting the entire or nearly all of the amount absorbed to leave the body. We must not forget that the toxic effects of arsenic are not due to its direct action upon the tissues. If the agent be injected subcutaneously the same changes will be observed in the internal organs, *i. e.*, the degeneration of glandular organs, submucous structures of the gastro-intestinal tract, manifestations on the part of the pleura identical with those described in the paper of the evening, etc. This action is due to the fact that arsenic, after its absorption, acts alternately as a reducing and as an oxidizing agent, arsenious acid being changed by the absorption of oxygen into arsenic acid; and, again, giving off oxygen, this is changed to arsenious acid. Such changes produce a rapid interchange of oxygen within the protoplasmic structure of the organs in which either of the acids finds entry, and must exercise a destructive action upon them. Thus arsenic sweeps, like a fire, through the organism and, in cases in which life is prolonged, disappears, leaving devastation behind. In these very cases (and the one reported probably belongs to this class) the alterations and degenerative changes produced are of such severe character as to result in a loss of the functional power of the affected organs that must lead to a fatal termination. Exhume such bodies and the closest scrutiny and most accurate analysis of all tissues will not disclose a trace of the poison.

It is true that our knowledge of ptomaines and their action is very meagre. Yet we must not disregard the possibility of their existence. Cases have been reported, especially in Italian literature, in which chemical examination has disclosed the presence of various mineral poisons and alkaloids, and a more careful examination revealed the fact that the symptoms observed antemortem, as also the post-mortem changes, were attributable to the presence of certain ptomaines.

DR. S. P. KRAMER said that he thought that the fact of copper being found had not been sufficiently dwelt upon. Arsenic was rapidly eliminated from the system and copper more slowly; therefore he thought the possible source of poison in these cases might have been the tri-arsenite of copper, or Paris-green as it was more commonly termed, which contained a large amount of copper.

PROF. DICKORE said, in answer to the statement made by the previous speaker in reference to Paris-green, that it contained a larger amount of arsenic than copper, and that the former was more quickly eliminated from the system than the copper. He still thought that the presence of copper might indicate one of the sources of the poisoning. By very careful work he had obtained several little black spots on white porcelain, which looked exactly like those produced by arsenic. Under other circumstances, when no medico-legal question was involved, he would have called these spots "arsenic;" since they were too small to produce all the arsenic reactions he could not make any other report than the one he had given the coroner. Small quantities of arsenic were sometimes found in medicinal preparations, as for instance in subnitrate of bismuth. It would have been interesting to have had the bismuth administered in these cases examined for arsenic. It must also be remembered that arsenic is by no means of uncommon occurrence in some sections of Kentucky, Ohio and Indiana. Most iron pyrites, and the water of some mineral springs, contain arsenic. Traces may enter the human body from such sources. Copper is sometimes found in articles of diet. Cases are on record in which fatal poisoning has happened from eating pickles colored with copper; also from other dishes of acid reaction kept or prepared in copper vessels. The speaker had met a brother of Mrs. Snook who had just recovered from the poisoning, and who said that an aunt who had eaten none of the chicken-salad had become sick and died; another relative had partaken of everything, but had drunk no coffee or water from the silver pitcher on the table; this relative remained well. These facts speak against the theory of ptomaine-poisoning. In the case of the brother of Mrs. Snook, it was stated that the solid parts of his discharges were of a tea-green color; this points toward copper-poisoning. He was under the impression that the water in the silver pitcher contained the poison. He also stated that the taste of the coffee was disagreeable, to such a degree that he could not even yet bear the smell of coffee. The speaker said that in his opinion the mystery was not entirely cleared up. He would recommend that the bodies of some of those who had died first be exhumed and carefully examined; should they all contain copper and arsenic, then Paris-green was the poison; but should they show copper only, or only arsenic, then the one or the other of these metals would be the cause of death. The young man referred to had ulcers of the lips, gums and tongue, such as are result from mineral poisons.

DR. MITCHELL, in replying to a question of Dr. Evans, stated that he had very recently received a letter from Dr. Irwin, of Louisville, who had treated many of these poisoning cases; that up to that date no post-arsenical paralysis had appeared in any of his cases.

DR. HYNDMAN, replying to a remark of one of the previous speakers, warned him that in case any of the bodies now buried should be exhumed and copper should be found on chemical analysis, not to jump to the conclusion that that metal was the cause of death unless found in very large quantity. As stated in the report, copper is so often found in chemical analyses of the body, that it is claimed by some chemists to be a normal constituent.

NEWS ITEMS.

British Medical Association.—The fifty-ninth annual meeting of the British Medical Association will be held at Bournemouth on Tuesday, Wednesday, Thursday and Friday, July 28, 29, 30 and 31, 1891.

An Address in Medicine will be delivered by Thomas Lauder Brunton, M.D., F.R.S., Lecturer on Materia Medica and Therapeutics at St. Bartholomew's Hospital, London; an Address in Surgery will be delivered by John Chiene, M.D., F.R.C.S.Ed., Professor of Surgery at the University of Edinburgh; an Address in Public Medicine will be delivered by Edward Cox Seaton, M.D., Lecturer on Public Health at St. Thomas's Hospital, London.

In the Section of Medicine the discussion on Wednesday, July 29th, on the Etiology and Prevention of Phthisis will be opened by P. H. Pye-Smith, M.D., F.R.S. Speakers: Professor Gairdner; E. Symes Thompson, M.D.; Sir Walter Foster, M.D.; J. B. Yeo, M.D.; J. G. S. Coghill, M.D.; T. W. Blake, M.R.C.S.; R. Robertson, M.B.; M. A. Boyd, M.B.; T. A. Vesey, M.B.; J. Moorhead, M.D.; E. Markham Skerritt, M.D.; A. E. Sansom, M.D. The discussion on Thursday, July 30th, on Lupus will be opened by Dr. J. F. Payne. Speakers: T. Colcott Fox, M.B.; P. S. Abraham, M.D.; J. Moorhead, M.D. The discussion Friday, July 31st, on the Effects of Alcohol will be opened by Dr. Wilks, F.R.S. Speakers: Professor Gairdner; Dr. Ferrier, M.D., F.R.S.; E. Symes Thompson, M.D.; Sir Walter Foster, M.D.; E. Long Fox, M.D.; J. C. Bucknill, M.D., F.R.S.; I. Burney Yeo, M.D.; Isambard Owen, M.D.; E. M. Skerritt, M.D.; J. Moorhead, M.D.; J. Watts Parkinson, M.R.C.S.; A. E. Sansom, M.D.

The following papers have been promised: Clinical Observations upon the Cardiac Bruits of Chlorosis, by A. G. Barrs, M.D.; Cancer and Phthisis occurring in Different Members of the Same Family, by T. W. Blake, M.R.C.S.; (subject unannounced), by J. G. S. Coghill, M.D.; Erysipelas of the Pharynx, by F. de Haviland Hall, M.D.; Some Points in the Treatment of Influenza, by Norman Kerr, M.D.; Differentiation in Rheumatic Diseases, by Hugh Lane, M.R.C.S.; On the Heart Sounds in Pulmonary Phthisis, by R. Robertson, M.B.; Hydrophobia, by T. A. Vesey, M.B.; Consumption—the Conditions of its Cure, by I. Burney Yeo, M.D.

In the Section of Surgery arrangements have been made for the following important subjects to come under discussion: 1. The Value of Professor Koch's Method in the Treatment of External Tuberculosis, to be introduced by William Watson Cheyne, F.R.C.S.; Mr. C. B. Keetley will take part in this discussion. 2. Abdominal Surgery: (i) The Operative Treatment of Peritonitis; (ii) The Treatment of Strangulated Hernia by Median Abdominal Section; to be introduced by Lawson Tait, F.R.C.S. 3. The Present Position of Intra-nasal Surgery; to be introduced by W. J. Walsham, F.R.C.S.

The following papers have been announced: Cancer of the Rectum and its Surgical Treatment, by Alfred Cooper, F.R.C.S.; Notes from an Experience of 100 Cases of Urinary Tuberculosis, by E. Hurry Fenwick, F.R.C.S.; The Limits to the Curability of Scoliosis—A Clinical Inquiry, by C. H. Golding-Bird, F.R.C.S.; On the Treatment of Peritonitis and of Hernia by Abdominal Section, by C. B. Keetley, F.R.C.S.; On the Treatment of Peritonitis and of Hernia by Abdominal Section, by C. B. Lockwood, F.R.C.S.; 1. The Relation of Movable Kidney to Hydro-nephrosis; 2. A New and Certain Way of Obliterating Hernial Sacs and Performing Radical Cure for Hydrocele, by R. Clement Lucas, M.B., B.S.; Intra-nasal Surgery in Relation to Sneezing and Hay Fever, by Greville MacDonald, M.D.; On the Treatment of Peritonitis and of Hernia by Abdominal Section, by H. A. Reeves, F.R.C.S.Ed.; On the Present Position of Nasal Surgery, by Charters J. Symonds, M.S., F.R.C.S., and Scanes Spicer, M.D.; On the Pathology, Diagnosis and Surgical Treatment of Necrosing Ethmoiditis, by E. Woakes, M.D.

In the Section of Obstetric Medicine and Gynecology the discussion on Puerperal Eclampsia will be opened by Dr. Galabin, and discussed by Dr. Braxton Hicks, Dr. Aust Lawrence, Professor Auvard (Paris), Dr. More Madden and others.

The discussion on Uterine Polypi will be opened by Dr. Murphy, and discussed by Dr. Robert Bell, Dr. More Madden, Dr. Godson, Dr. Murdoch Cameron, Professor Auvard, and others. A Demonstration on Frozen Sections of the Pregnant Cadaver will be given by Dr. Freeland Barbour.

The following papers have been announced: The Medical Treatment of Cervical Metritis, by Professor Auvard (Paris); The Treatment of Chronic Disease of the Uterine Adnexa, by Robert Bell, M.D.; Murdoch Cameron, M.D., will show an Improved Crutch for Operations; Eclampsia Occurring in a Primipara aged Fifteen and a Half Years, by D. D. Donovan, F.R.C.S.; Two Additional Cases of Porro's Operation, by Clement Godson, M.D; Early Incision and Drainage in Cases of So-called Pelvic Abscess, by Aust Lawrence, M.D.; On the Treatment of Puerperal Convulsions, by More Madden, M.D.; A Case of Epithelioma of the Perineum Treated by Electricity, by J. Inglis Parsons, M.D.; Midwives Should be Ended, not Mended, and the Public Supplied with Thoroughly Trained Obstetric Nurses, by R. Reid Rentoul, M.D.; A Case of a Rapidly Recurring Uterine Polypus, by William Travers, M.D.

In the Section of Public Medicine the following papers have been announced: Factory and Workshop Sanitary Inspection, by H. W. Langley Browne, F.R.C.S.Ed.; An Outbreak of Diphtheria at Leeds, by Spottiswoode Cameron, M.D.; Diphtheria—the Cause of its Increase and the Means to be Adopted for its Prevention, by Alf. Carpenter, M.D.; The Notification of Diseases Act—Should Measles or Other Diseases be Added to the Number of Compulsory Notifiable Diseases? by Harvey Littlejohn; The Powers Conferred on Sanitary Authorities with Regard to Slaughterhouses, Bakehouses, and Milkshops, by H. Manley, M.D.; Vaccination—What Constitutes Efficient Vaccination? by H. May, L.R.C.P., and C. E. Underhill, M.D.; The Duty of the Medical Officer of Health with Reference to the Examination of Notified Cases of Infectious Disease and the Sanitary Inspection and Disinfection of Premises, by B. H. Mumby, M.D.; The Discharge of Town Sewage into the Sea Near Watering-places and Seaside Health Resorts, by Louis Parkes, M.D.; The Influenza Epidemic and its Distribution in the British Isles, by Frank-

lin Parsons, M.D., V.P.; The Water Supply of Rural Communities where (*a*) Streams, (*b*) Ponds, or (*c*) Shallow Wells are Relied On, by J. C. Thresh, M.D. (Chelmsford), and E. F. Willoughby, M.D.; It is Imprudent and Inexpedient to Treat Scarlet Fever and Diphtheria in the same Isolation Hospital, by Wm. Thursfield, M.D.; The Disposal of the Dead, by Sir T. Spencer Wells, Bart., and J. Comyns Leach, M.D.; The Communicability of Tuberculous Diseases from Animals to Man, by G. Sims Woodhead, M.D., and Professor McFadyean (Edinburgh).

In the Section of Psychology the President, P. Maury Deas, M.B., will deliver an address, to be followed by a discussion. Dr. T. Clifford Allbutt, F.R.S., will open a discussion On the Proposed Hospitals for the Treatment of the Insane. In conjunction with Dr. Allbutt's paper, Dr. F. H. Walmsley (Leavesden Asylum) will read a paper on the Desirableness of Throwing Open Our Asylums for the Post-Graduate Study of Insanity. Dr. T. Claye Shaw, F.R.C.P., will introduce a discussion on the Surgical Treatment of General Paralysis. Dr. G. H. Savage, F.R.C.P., will initiate a discussion on the Influence of Surroundings on the Production of Insanity. A contribution on the Truth of the Idea of Heredity, by Dr. Wm. Wallace (Glasgow), will form part of this discussion.

The following papers have been announced: Weak-minded Criminals: their Psychological and Anthropological Characteristics, by J. Baker, M.B. (H. M. Prison, Portsmouth); The Value of Sulphonal as a Mental and Motor Sedative, by J. A. Ewan, M.B. (Dorset County Asylum); Psychopathic Epidemics, by Theo. B. Hyslop, M.B. (Bethlem); Some Unusual Forms of General Paralysis, by A. Little, M.B. (Virginia Water); The Criminal Acts of Criminal Lunatics, by D. Nicolson, M.D.; Puerperal Insanity, by S. T. Smyth, M.D. (Bournemouth); Cancer in its Relations to Insanity, by H. Snow, M.D. (London); Association of Various Conditions of Development in Relation to Brain Power and Nutrition, by Francis Warner, M.D. (London).

Should the Committee of Investigation on Hypnotism present a report, it is proposed that this report be considered and probably discussed on Thursday, July 30th. In addition to those gentlemen who are to open discussions and read papers, the following will take part in the deliberations of the Section: Professor Gairdner, Sir J. Crichton Browne, Dr. Hughlings Jackson, Dr. Batty Tuke, Professor Ferrier, Dr. Macewen (Glasgow), Dr. Bateman (Norwich), Dr. Fletcher Beach, Dr. Mercier, Dr. Wiglesworth, Dr. Outterson Wood, Dr. Needham, Dr. Gayton, Dr. Strahan.

In the Section of Pathology, Dr. Hingston Fowler will open a discussion on Arrested Pulmonary Tuberculosis. Mr. F. G. Eve will open a discussion on Senile Changes in the Bones. Dr. Phineas Abraham will give a demonstration on Microscopic Sections of Skin Diseases. Dr. Carey Coombs will give a demonstration with Hæmoglobinometer and Two Cytometers.

The following papers have been announced: A Short Account of Herxheimer's Spirals in the Epidermis and Mucous Membranes, Illustrated by Microscopical Sections of Various Skin Affections, by Alfred Eddowes, M.D.; A series of Specimens of Heart Diseases, with Verbal Demonstration, by Francis Hawkins, M.D.; Paper and specimens, The Specific Gravity of the Blood in Disease, by E. Lloyd Jones, M.B.; Robert Maguire, M.D., will show specimens and make a communication on Lymphadenoma of the Solar Plexus with Bronzed Skin; A paper on the Accurate Measurements of the Cubic Contents of the Several Chambers of the Heart, by J. R. Radcliffe, M.B., and T. Stacey Wilson, M.B.; On the Real Anatomical Nature of So-called Arterio-capillary Fibrosis, its Symptoms During Life, and its Relation to Granular Kidney (during Bright's disease), by Thomas Saville, M.D.; Paper and specimens, The Insidious Bone Lesions of Mammary Carcinoma (second paper), by Herbert Snow, M.D.; Paper and specimens, Gynæcomastia, by Roger Williams, F.R.C.S. The following gentlemen have also promised papers: Dr. Handford, Dr. Sims Woodhead, Dr. W. Russell, and Dr. McMunn.

In the Section of Ophthalmology two subjects have been set down for special discussion: 1. The Treatment of Infantile Cataract; 2. The Treatment of Lachrymal Disease.

The following papers are announced: Vision Tests as Applied to Railway Servants, by W. M. Beaumont, M.R.C.S.; Some Cases of Retinal Detachment, by W. A. Brailey, M.D.; The Pathology of the Ophthalmoplegiæ, by W. J. Collins, M.D., and L. Wilde, M.D.; A Review of the Tests for Color-blindness, by F. W. Edridge-Green, M.D.; Cases of Sarcoma of Choroid Causing Death by Metastasis, by A. Hill Griffith, M.D.; The Value of Electricity in Affections of the Optic Nerve and Retina, by C. G. Lee, L.R.C.P.; Control of Railway Servants' Eyesight, by M. M. McHardy, F.R.C.S.Ed.; The Action and Uses of Prismatic Combinations, by A. S. Percival, M.B.; Some Points in the Treatment of Lamellar Cataract, by C. Wray, F.R.C.S.

In the Section of Diseases of Children the two following subjects have been set down for special discussion: 1. The Feeding of Infants up to the Completion of the First Dentition—to be opened by Dr. Henry Ashby, of Manchester; Dr. Cheadle, Professor Baginsky, of Berlin; Dr. Emil Pfeiffer, of Wiesbaden; Dr. Louis Marshall, of Nottingham; and Dr. Angel Money, will take part. 2. The Treatment of Pleurisy and Empyema in Children, and their Value—to be opened by Mr. R. J. Godlee; Mr. W. H. A. Jacobson, Mr. Watson Cheyne, Professor Baginsky, of Berlin, Dr. Emil Pfeiffer, of Wiesbaden, Dr. Angel Money, Dr. G. A. Carpenter, and Dr. Lewis Marshall, of Nottingham, will take part.

The following paper is announced: Osteotomy Generally; with Special Reference to Tarsectomy in Advanced and Intractable Cases of Talipes Equino varus, by John Ewens, L.R.C.P.

Section of Therapeutics: A discussion on Koch's Treatment of Consumption—to be introduced by the President. The following gentlemen will take part in the discussion: Mr. Watson Cheyne, Dr. E. Markham Skerritt, Dr. Barrs, Mr. Fowler, and others. A discussion on Anæsthetics will be introduced by Dr. Lauder Brunton. The following gentlemen will take part in the discussion: Dr. Dudley Buxton, Dr. Barrs, Mr. Hartley, Mr. Pridgin Teale, and others.

The following papers are announced: On the Use of Digitalis in Aortic Disease, by — Barrs, M.D.; On Anæsthetics, by Dudley Buxton, M.D.; On the Treatment of Exophthalmic Goitre, by H. W. Denton-Cardew, M.R.C.S.

The Practice of Medicine in France.—A new medical law has passed the French Chamber of Deputies by which no one shall be allowed to practise medicine in France without a diploma of Doctor of Medicine granted by the Government after examinations passed before a State institution of superior medical education.

Dr. J. C. Culbertson, of the Cincinnati *Lancet and Clinic*, has been appointed by the Board of Trustees to succeed Dr. John H. Hollister in the editorial control of *The Journal of the American Medical Association.*

The Mississippi Valley Medical Association will hold its seventeenth annual session at St. Louis, October 14, 15, and 16, 1891. The medical profession is respectfully invited to attend the meeting.

Port Physician of Philadelphia.—Dr. Henry Leffmann has entered upon the duties of the office of Physician of the Port of Philadelphia, to which he has been appointed by the Governor of the State and which position he has on a previous occasion most creditably filled.

The Medical Society of Franklin County will hold a meeting, to be followed by a banquet, at Chambersburg, July 21, 1891. Dr. John Montgomery will deliver an address of welcome. Dr. D. F. Unger will present "Observations on Cancer." Dr. Geo. S. Hull will consider "What the Eye Reveals to the Physician Concerning General Diseases." Dr. I. N. Snively will report upon "Some Unique Surgical Operations."

Montour County Medical Society.—The seventeenth annual meeting of the Montour County Medical Society will be held at the State Hospital for the Insane, Danville, Penna., June 18, 1891. Papers will be read by Dr. S. S. Schultz on "Limitation to Curative Work in State Hospitals for the Insane;" Dr. N. W. Voorhees on "Tuberculous Peritonitis;" Dr. H. B. Meredith on "Hypertrophic Cirrhosis of the Liver, with the Report of a Case;" Dr. J. R. Kimerer on "Peculiar Sequelæ of Pneumonia;" Dr. E. A. Curry on "Multiple Abscesses." Dr. James Oglesby will present a sketch of the Society, and the retiring President, Dr. C. B. Mayberry, will deliver an address.

New Lecturers at the Polyclinic.—Dr. H. R. Wharton has been elected Lecturer on Surgical Diseases of Children. In a part of the course the subjects of tracheotomy and intubation will be considered. Dr. Chas. P. Noble has been elected Lecturer on Gynecology; Dr. Jas. K. Young, Lecturer on Orthopædic Surgery; Dr. G. Betton Massey, Lecturer on Gynecological Electrotherapeutics, and Dr. Lewis H. Adler, Lecturer on Diseases of the Rectum.

The Congress of American Physicians and Surgeons will be held at Washington, from 3 to 6 P.M., September 22, 23, 24 and 25, 1891. Dr. William Pepper, of Philadelphia, is Chairman of the Executive Committee.

Association of the Military Surgeons of the National Guard.—The regular meeting of the Association of Military Surgeons of the Wisconsin National Guard was held in Milwaukee, June 20, 1891.

The proposed meeting of the Surgeons of the National Guard of the United States, which was to have been held in Chicago in July next, has been postponed until September. Due notice of the date of meeting will be given. Every effort will then be made to organize an "Association of Military Surgeons of the National Guard." About four hundred surgeons throughout the United States have thus far expressed a willingness to attend the meeting. At the first meeting papers will be read by Surgeon-General Bryant, of the New York N. G.; by Surgeon-General Yandell, of the Kentucky N. G.; by Surgeon-General Senn, of the Wisconsin N. G.; and by the Surgeon-General of the Illinois N. G. The Association will be entertained in Chicago by the local Guard.

W. W. Keen, A.M., M.D.—At the one hundred and twenty-third annual commencement of Brown University the honorary degree of Doctor of Laws was, among others, conferred upon Dr. William Williams Keen, Professor of the Principles of Surgery and of Clinical Surgery in the Jefferson Medical College. In thus doing deserved honor to a distinguished alumnus, Brown University has added to its own laurels.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM JUNE 16 TO JUNE 22, 1891.

By direction of the Secretary of War, WILLIAM C. BORDEN, *Captain and Assistant Surgeon*, will, upon the final abandonment of Fort Davis, Texas, report in person to the commanding officer Jackson Barracks, La., for duty at that post.—Par. 4, *S. O. 139, A. G. O.*, June 18, 1891.

MCKEE, JAMES C., *Lieutenant-Colonel and Surgeon.*—Having been found incapacitated for active service, on account of disability incident to the service, is, by direction of the President, retired from active service this date, under the provisions of Section 1251, R. S.—Par. 4, *S. O. 137, A. G. O.*, June 16, 1891.

TAYLOR, BLAIR D., *Captain and Assistant Surgeon*, is granted leave of absence for one month, to take effect on or about the 1st proximo.—Par. 3, *S. O. 65, Department of the Missouri*, June 15, 1891.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY FOR THE WEEK ENDING JUNE 20, 1891.

RUTH, M. L., *Surgeon.*—Detached from U. S. S. "Newark," and granted leave of absence for six months, with permission to leave the United States.

BRIGHT, GEORGE A., *Surgeon.*—Ordered to the U. S. S. "Newark."

PIGOTT, M. R., *Assistant Surgeon.*—Ordered to the U. S. Receiving-ship "Independence."

WELLS, HOWARD, *Surgeon.*—Detached from Naval Hospital, Chelsea, and wait orders.

STEELE, J. M., *Passed Assistant Surgeon.*—Ordered to Naval Hospital, Chelsea, Mass.

COMMUNICATIONS are invited from all parts of the world. Original articles contributed exclusively to THE MEDICAL NEWS will upon publication be liberally paid for, or 250 reprints will be furnished instead of payment, provided that the request for reprints be noted by the author at the top of the manuscript. When necessary to elucidate the text, illustrations will be provided without cost to the author.

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